

SPRINGER
REFERENCE

Jeremy Hunsinger
Matthew M. Allen
Lisbeth Klastrup
Editors

Second International Handbook of Internet Research

 Springer

Second International Handbook of Internet Research

Jeremy Hunsinger • Matthew M. Allen
Lisbeth Klastrup
Editors

Second International Handbook of Internet Research

With 29 Figures and 23 Tables



Springer

Editors

Jeremy Hunsinger
Communication Studies
Wilfrid Laurier University
Waterloo, ON, Canada

Matthew M. Allen
Deakin University
Burwood, VIC, Australia

Lisbeth Klastrup
IT University of Copenhagen
Copenhagen, Denmark

ISBN 978-94-024-1553-7

ISBN 978-94-024-1555-1 (eBook)

ISBN 978-94-024-1554-4 (print and electronic bundle)

<https://doi.org/10.1007/978-94-024-1555-1>

© Springer Nature B.V. 2020

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature B.V.

The registered company address is: Van Godewijkstraat 30, 3311 GX Dordrecht, The Netherlands

Preface

With the *Second International Handbook of Internet Research*, we have brought together a diverse series of papers that highlight elements of the still-growing field of internet studies. Internet research as an academic field encompasses plenty of possibilities and a multitude of perspectives. While one might think that this field deals with how to research things via the internet, in fact focus has always been on how the internet operates and who uses it, in which ways, and why. It also attends closely to the question of how the internet also acts upon societies, polities, and economies to create change through its relations. Emerging in the mid-to-late 1990s, the field of internet research is today well established across a variety of academic disciplines and interdisciplinary endeavors. Internet research has taken center stage, in both methods and questions, for many scholars precisely because the internet itself has radically transformed contemporary human life and endeavor in the past 25 years. While the technical means and economic systems through which the internet works have changed dramatically, and the scope of what might constitute “the internet” has expanded in many ways, the underpinning conceptual nature of a network of networks and the consequent reorientation of mediated human communication and information provision have not. Internet research is the leading field within which all manner of research relating to human-computer interaction, computer-mediated action, and networked communication can find a home.

The internet is a strange object of study because, on the one hand, there is no internet, there is just a collection of computers and networks with their services, and on the other hand, the internet is becoming almost everything for large sections of the global population. People who research the internet recognize the abundant opportunities and problems that the intangibility and growth of the internet generates. The individuals and communities that use the internet, including researchers, can easily see it as both uniting people into groups and yet also polarizing those groups against one another. There are people exploring a wide variety of goods via the internet, trying to unite the world and make it a better place, and some seeking to do a great deal of evil through for instance exploitation of data and strategic dissemination of misinformation. As researchers, we have come to understand that researching the internet and its population is anything but simple. It is a complex environment rife with ethical, political, and sometimes even existential challenges. No longer a subcultural formation, distinct from the mainstream (when we used to refer to

being online and offline), the internet is now always-on, always-there, and always in mind for the vast majority of the world and for every social group and nation-state.

What is clear is that while we have had the commercial internet since the 1990s and the technology of the internet since the 1960s, experience alone is not providing adequate guidance for its development and use. More finely grained research into highly specific topics, is needed. The field of internet research is young, though it has foundations in social and technical research that are far older than its object of study. As researchers we still struggle to develop methodologically appropriate tools to inquire into and know the constant new practices of the internet's users and designers, technologists, and politico-economic overseers. Indeed the Association of Internet Researchers, the primary academic body representing internet research, is only approaching its twentieth annual conference: each year, not only are new insights found at this conference but also deep discussions held as to how to continue our research for future success.

New knowledge and new areas of research will continue being developed. This volume exemplifies that trend. In our first *International Handbook of Internet Research*, we gathered a broad array of papers that attempted to map what we considered a fair part of the field. Now, almost 10 years later, the field is so broad that we could never attempt the same and be successful. We have instead divided this handbook into two sections, foundations and futures, the first representing new and current takes on internet research and the second representing thoughts and discussions of where researchers believe internet research is headed and what it needs to focus on. We can think of these sections as a set of recombinant treasure maps that mutate, multiply, and divide under careful readings of each individual chapter. The chapters speak to each other in many respects, not necessarily because of intent, but because each is a voice in the multiplying conversation of internet research, and they are produced as much by the way authors listen to and speak into that shared conversational domain, respectful of what is already said but eager to move us forward.

Neither of these sets of papers is in any way intended to be complete or comprehensive. Instead, they are meant to be exemplary and good guides to either modes of research or directions in which to pursue research. The variety they encompass indicates the richness of the field without ever attempting to capture the whole of the field. Our efforts as editors have been to provide highlights and emphasis that could be useful and inspiring, also for future researchers. We have also attempted to promote a diversity of voices and perspectives, to truly represent the international diversity of internet research.

Space exists for future handbooks of internet research. There should be handbooks in relation to specific areas of the field, methods of research in the field, and educational topics related to the field. There have been other handbooks compiled, some of them by the editors of this volume, and some compiled by contributors to this volume. Each of those volumes has its place among tens of thousands of contributions in books and articles that now constitute the field. We are lucky and happy to be making our contribution with this volume. Editing and curating this

work have been a privilege, permitting us to help steer our collective scholarly conversation into some new places while not forgetting its origins.

As editors we want to thank all of the contributors to this volume and our publishers and production editors. In particular, we would like to thank all the contributors whom we selected in the first round for their patience with us and fortitude through the multiyear process through which we led them. Our march through the publishing process has been unexpectedly slowed by several life events many of which were sad, tragic, and mournful, a few of which required extensive recovery, and a fewer yet of which were joyful. That we are now able to present this volume is only due to the contributors' willingness to join us on the journey, both those who jumped onboard when we first set sails and those who boarded along the way. This book is theirs.

Waterloo, Canada
Burwood, Australia
Copenhagen, Denmark
September 2019

Jeremy Hunsinger
Matthew M. Allen
Lisbeth Klastrup
Editors

Contents

Part I Foundations	1
1 Introduction: Foundations	3
Jeremy Hunsinger	
2 Science and Medicine on YouTube	7
Joachim Allgaier	
3 Spatial Analysis Meets Internet Research	29
Marco T. Bastos	
4 Collaboration Between Social Sciences and Computer Science: Toward a Cross-Disciplinary Methodology for Studying Big Social Data from Online Communities	47
Maude Bonenfant and Marie-Jean Meurs	
5 Big Social Data Approaches in Internet Studies: The Case of Twitter	65
Axel Bruns	
6 [Dis]connected Households: Transnational Family Life in the Age of Mobile Internet	83
Earvin Charles Cabalquinto	
7 How Computer Networks Became Social	105
Chris Chesher	
8 Lessons from Internet Art About Life with the Internet	127
Elisavet Christou	
9 Logics and Legacy of Anonymous	145
E. Gabriella Coleman	
10 Digital Folklore	167
Gabriele de Seta	

- 11 Connecting, Bypassing, and Networking: Analyzing Idle No More's Online Activities** 185
Kathy Dobson
- 12 Combating the Live-Streaming of Child Sexual Abuse and Sexual Exploitation: A Need for New Legislation** 201
Desara Dushi
- 13 Feminized Digital Sociality and Online Philanthropy** 225
Radhika Gajjala and Kaitlyn Wauthier
- 14 Networks of Change: The Sociology of Network Media** 239
Stig Hjarvard
- 15 Critical Internet Studies** 263
Jeremy Hunsinger
- 16 Degree Programs in Internet Studies or Internet Research** 281
Jeremy Hunsinger
- 17 List of Research Centers or Institutes in Internet Studies/Internet Research** 303
Jeremy Hunsinger
- 18 Researching Affordances** 337
Aske Kammer
- 19 Telephone Interviewing as a Qualitative Methodology for Researching Cyberinfrastructure and Virtual Organizations** 351
Kerk F. Kee and Andrew R. Schrock
- 20 What Media Logics Can Tell Us About the Internet?** 367
Ulrike Klinger and Jakob Svensson
- 21 An Obscure Object of Communicational Desire: The Untold Story of Online Chat** 381
Guillaume Latzko-Toth and Maxigas
- 22 Diversity: The Military's Representation of Diversity on Social Media** 395
Rupinder Mangat
- 23 Privacy and the Ethics of Disability Research: Changing Perceptions of Privacy and Smartphone Use** 413
Leanne McRae, Katie Ellis, Mike Kent, and Kathryn Locke
- 24 From Technological Issue to Military-Diplomatic Affairs: Analysis of China's Official Cybersecurity Discourse (1994–2016)** 431
Weishan Miao, Jian Xu, and Hongjun Zhu

25	Online Field Theory	445
	Mathieu O’Neil and Robert Ackland	
26	Digital Activism Within Post-Fordism: Interventions Between Assimilation and Exclusion	469
	Alexandra Reynolds	
27	Historical Web as a Tool for Analyzing Social Change	489
	Ralph Schroeder, Niels Brügger, and Josh Cowls	
28	Research Programs as a Tool to Map Internet Studies	505
	Håkan Selg	
29	Affect and the Expression of Emotions on the Internet: An Overview of Current Research	529
	Javier Serrano-Puche	
30	Big Data Goes to Hollywood: The Emergence of Big Data as a Tool in the American Film Industry	549
	Felix M. Simon and Ralph Schroeder	
31	Research Ethics, Vulnerability, and Trust on the Internet	569
	Katrin Tiidenberg	
Part II	Futures	585
32	Futures Introduction	587
	Jeremy Hunsinger	
33	Fuzzy Limits: Researching Discourse in the Internet with Corpora	591
	Manuel Alcántara-Plá	
34	Paradoxes of the Cyber Party: The Changing Organizational Design of the British Labour Party	609
	Emmanuelle Avril	
35	Smart Contracts as Evidence: Trust, Records, and the Future of Decentralized Transactions	627
	Kristin B. Cornelius	
36	Legislating for Internet “Access”-ability	647
	Lucy M. Cradduck	
37	Blended Data: Critiquing and Complementing Social Media Datasets, Big and Small	669
	Sky Croeser and Tim Highfield	
38	Cryptographic Media	691
	Quinn DuPont	

- 39 Disguised Propaganda from Digital to Social Media** 707
Johan Farkas and Christina Neumayer
- 40 Today's Internet for Tomorrow's Cities: On Algorithmic Culture and Urban Imaginaries** 725
Marcus Foth, Peta Mitchell, and Carlos Estrada-Grajales
- 41 New Media, Religion, and Politics: A Comparative Investigation into the Dialogue Between the Religious and the Secular in France and in Vietnam** 747
Anh Ngoc Hoang
- 42 Big Capt?** 767
Jeremy Hunsinger
- 43 Digitally Researching Islam** 785
Mohammed Ibahrine
- 44 How to Compare Different Social Media: A Conceptual and Technical Framework** 799
Jakob Linaa Jensen, Peter B. Vahlstrup, and Anja Bechmann
- 45 Nexus Analysis as a Framework for Internet Studies** 815
Malene Charlotte Larsen and Pirkko Raudaskoski
- 46 Ethics of Social Media Research: State of the Debate and Future Challenges** 835
Elisabetta Locatelli
- 47 Deep Data: Analyzing Power and Influence in Social Media Networks** 857
Fiona Martin and Jonathon Hutchinson
- 48 Embedded Ideology of Technical Media: Rethinking Subjectivities Within a Second-Order Cybernetics** 879
Zachary J. McDowell
- 49 Convergence, Internet, and Net Neutrality Policy: What the Future Holds for the Internet and Online Content** 893
Kruakae Pothong
- 50 Affective Flux of Feminist Digital Collectives, or What Happened to the Women's March of 2017** 915
Christina Riley
- 51 The Future of Crowdsourcing Through Games** 935
Karen Schrier
- 52 Big Data Approaches to the Study of Digital Media** 957
Ralph Schroeder and Josh Cowls

53 Listen: Survivance and Decolonialism as Method in Researching Digital Activism	979
Cindy Tekobbe	
54 Identity, Difference, and Social Technology	995
Neal Thomas	
55 Constitutive Surveillance and Social Media	1011
Ryan Tippet	
56 Lifelogging: Recording Life Patterns Tied to Daily Internet Usage	1033
Chen-Yi Yu and Ji-Lung Hsieh	
Index	1053

About the Editors



Jeremy Hunsinger holds a Ph.D. in Science and Technology Studies from Virginia Tech.

At Virginia Tech, he was one of the founders of the Center for Digital Discourse and Culture. He attended the Oxford Internet Institute's 2004 Summer Doctoral Programme and was an instructor there in 2009 and 2011. Jeremy was Graduate Fellow of the NSF Workshop on Values in Information Systems Design in 2005 and 2010. He was an Ethics Fellow at the Center for Information Policy Research at the University of Wisconsin, Milwaukee, in 2007–2010. He was coeditor of the journal *Learning Inquiry* and has published in *Fast Capitalism*, *The Information Society*, *Social Epistemology*, and other leading academic journals. He recently also coedited a special issue on Learning and Research in Virtual Worlds for *Learning, Media and Technology*. Jeremy coedited the *International Handbook of Virtual Learning Environments* and the *International Handbook of Internet Research* and has edited and contributed to several other volumes.



Matthew M. Allen is Professor of Internet Studies at Deakin University, Geelong, Australia. Matthew led the establishment of Internet Studies as a teaching and research program within Australia, setting up the first degree programs at undergraduate and postgraduate level at Curtin University in the 1990s and being appointed as Professor of Internet Studies and Head of Department. He is an award-winning educator and a Fellow of the Australian Learning and Teaching Council, and has more than 20 years' experience and expertise in teaching students via the internet. He has written widely on topics in this field, focusing primarily on the

way in which internet technologies cannot be used as “tools” to improve learning but are part of the dialogic experience of shared learning and teaching between students and academics. He is also a leading researcher of social consequences and meanings of the internet, most recently publishing highly cited work on the history of the internet, focused on the origins, impact, and end of the so-called web 2.0 period of internet development. He is also a former President of the Association of internet Researchers and helped internationalize the Association in its early years. His current research projects include consideration of the profound importance of the “Chinese internet,” especially as it becomes a site of global political contestation; the recent history of the lived experience of broadband deployment in Australia; and the philosophical and cultural complexities of regulation of internet content, conduct, and consequences.



Lisbeth Klastrup holds a Ph.D. in Digital Culture and Communication from the IT University of Copenhagen, Denmark.

Lisbeth Klastrup is Associate Professor at the IT University of Copenhagen. Since 1999, she has studied online culture, digital communication, and social interaction, with a specific focus on the everyday uses of social media, transmedial worlds, and multiplayer gameworlds. Her current research focuses on the mediation of death on social media, the use of transmedial world in everyday digital life, and the use of social media and memes in Danish elections. She has published several articles and book chapters within the areas mentioned and is coeditor of the first Danish book on digital media analysis (*Digitale Verdener* 2004), coeditor of the first *International Handbook of Internet Research*, author of an introductory book on Social Network Media (*Sociale Netværksmedier*, DK 2016), and coauthor of the forthcoming book *Transmedial Worlds in Everyday Life: Networked Reception, Social Media, and Fictional Worlds* (Tosca and Klastrup 2019).

Contributors

Robert Ackland School of Sociology, Australian National University, Canberra, ACT, Australia

Manuel Alcántara-Plá Wor(l)ds Lab – Department of Linguistics, Universidad Autónoma de Madrid, Madrid, Spain

Joachim Allgaier University Hospital Cologne, Research Unit Ethics, Cologne, Germany

Emmanuelle Avril Université Sorbonne Nouvelle, Paris, France

Marco T. Bastos Department of Sociology, University of London, London, UK

Anja Bechmann Aarhus Institute of Advanced Studies, Aarhus University, Aarhus C, Denmark

Maude Bonenfant Department of Social and Public Communication, University of Quebec in Montreal, Montreal, QC, Canada

Niels Brügger Aarhus University, Aarhus C, Denmark

Axel Bruns Digital Media Research Centre, Queensland University of Technology, Brisbane, Australia

Earvin Charles Cabalquinto School of Communication and Creative Arts, Deakin University, Geelong, VIC, Australia

Chris Chesher Department of Media and Communications, University of Sydney, Sydney, Australia

Elisavet Christou HighWire CDT, School of Computing and Communications, Lancaster University, Lancaster, UK

E. Gabriella Coleman McGill University, Montreal, Canada

Kristin B. Cornelius Information Studies, University of California, Los Angeles, USA

Josh Cowls The Alan Turing Institute, London, UK

Lucy M. Cradduck Queensland University of Technology, Brisbane, QLD, Australia

Sky Croeser Curtin University, Perth, WA, Australia

Gabriele de Seta Institute of Ethnology, Academia Sinica, Taipei, Taiwan

Kathy Dobson School of Journalism and Communication, Carleton University, Ottawa, ON, Canada

Quinn DuPont Information School, University of Washington, Seattle, WA, USA

Desara Dushi CIRSFID, University of Bologna, Bologna, Italy

Faculty of Law, Economics and Finance, University of Luxembourg, Luxembourg, Luxembourg

Katie Ellis Curtin Critical Disability Studies Network, Curtin University, Bentley, WA, Australia

Carlos Estrada-Grajales QUT Design Lab, Queensland University of Technology, Brisbane, QLD, Australia

Johan Farkas School of Arts and Communication, Malmö University, Malmö, Sweden

Marcus Foth QUT Design Lab, Queensland University of Technology, Brisbane, QLD, Australia

Radhika Gajjala Bowling Green State University, Bowling Green, OH, USA

Tim Highfield University of Amsterdam, Amsterdam, North Holland, The Netherlands

Stig Hjarvard Department of Media, Cognition and Communication, University of Copenhagen, Copenhagen S, Denmark

Anh Ngoc Hoang Faculty of Humanities, Université Catholique de l’Ouest, Angers, France

Ji-Lung Hsieh Graduate Institute of Journalism, National Taiwan University, Taipei, Taiwan

Jeremy Hunsinger Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

Jonathon Hutchinson Department of Media and Communications, University of Sydney, Camperdown, NSW, Australia

Mohammed Ibahrine Department of Mass Communication, American University of Sharjah, Sharjah, United Arab Emirates

Jakob Linaa Jensen Danish School of Media and Journalism, Aarhus C, Denmark

Aske Kammer The IT University of Copenhagen, Copenhagen, Denmark

Kerk F. Kee School of Communication, Chapman University, Orange, CA, USA

Mike Kent Curtin Critical Disability Studies Network, Curtin University, Bentley, WA, Australia

Ulrike Klinger Institute for Media and Communication Studies, Freie Universität Berlin, Berlin, Germany

Malene Charlotte Larsen Department of Communication and Psychology, Aalborg University, Aalborg, Denmark

Guillaume Latzko-Toth Department of Information and Communication, Université Laval, Quebec City, Canada

Elisabetta Locatelli Università Cattolica del Sacro Cuore, Milan, Italy

Kathryn Locke Curtin Critical Disability Studies Network, Curtin University, Bentley, WA, Australia

Rupinder Mangat Balsillie School of International Affairs, Wilfrid Laurier University, Waterloo, ON, Canada

Fiona Martin Department of Media and Communications, University of Sydney, Camperdown, NSW, Australia

Maxigas Department of Sociology, Lancaster University, Centre for Science Studies, Lancashire, UK

Internet Interdisciplinary Institute, Universitat Oberta de Catalunya, Barcelona, Spain

Zachary J. McDowell University of Illinois at Chicago, Chicago, IL, USA

Leanne McRae Curtin Critical Disability Studies Network, Curtin University, Bentley, WA, Australia

Marie-Jean Meurs Department of Computer Science, University of Quebec in Montreal, Montreal, QC, Canada

Weishan Miao Chinese Academy of Social Sciences, Beijing, China

Peta Mitchell Digital Media Research Centre, Queensland University of Technology, Brisbane, QLD, Australia

Christina Neumayer Digital Design Department, IT University of Copenhagen, Copenhagen, Denmark

Mathieu O’Neil News and Media Research Centre, University of Canberra, Canberra, ACT, Australia

Kruakae Pothong University College London, London, UK

Pirkko Raudaskoski Department of Communication and Psychology, Aalborg University, Aalborg, Denmark

Alexandra Reynolds Research, Innovation and Enterprise, Solent University, Southampton, UK

Christina Riley Women and Gender Studies, George Mason University, Washington, DC, USA

Karen Schrier Marist College, Dutchess County, Poughkeepsie, NY, USA

Andrew R. Schrock School of Communication, Chapman University, Orange, CA, USA

Ralph Schroeder Oxford Internet Institute, University of Oxford, Oxford, UK

Håkan Selg Department of Information Technology, Uppsala University, Uppsala, Sweden

Javier Serrano-Puche Institute for Culture and Society, University of Navarra, Pamplona, Spain

Felix M. Simon Oxford Internet Institute, University of Oxford, Oxford, UK

Jakob Svensson School of Arts and Communication (K3), Malmö University, Malmö, Sweden

Cindy Tekobbe Department of English, The University of Alabama, Tuscaloosa, AL, USA

Neal Thomas Department of Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

Katrin Tiidenberg Aarhus University, School of Communication and Culture, Aarhus, Denmark

Baltic Film, Media, Arts and Communication School, Tallinn University, Tallinn, Estonia

Ryan Tippet Department of Media, Film and Communication, University of Otago, Dunedin, New Zealand

Peter B. Vahlstrup Information Studies, Aarhus University, Aarhus C, Denmark

Kaitlyn Wauthier Bowling Green State University, Bowling Green, OH, USA

Jian Xu Deakin University, Melbourne, VIC, Australia

Chen-Yi Yu Institute of Sociology, Academia Sinica, Taipei, Taiwan

Hongjun Zhu Chinese Academy of Social Sciences, Beijing, China

Part I

Foundations



Introduction: Foundations

1

Jeremy Hunsinger

Contents

About This Volume	4
Foundations Section	5

Abstract

This is an introduction to the foundations section of the volume. It discusses the material and provides some context. It briefly describes some of the history of this volume.

Keywords

Foundations · Internet research · Internet studies

As I sit here on the train home from the 19th Association of Internet Researchers conference in Montreal entitled “Transnational Materialities,” it strikes me that this introduction to the foundational chapters of this second volume of the *International Handbook of Internet Research* do not need to be written. The foundations for Internet research already exist in the community of Internet researchers and have existed for over 20 years, even before the association was founded. The foundations of the field are fine even though the sources of Internet research are now more than ever under threat from the continued privatization and enclosure of some crucial information that the field uses for research. The ongoing privatization of information is deeply problematic, especially when that information should not be owned by

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

e-mail: jhuns@vt.edu

those privatizing it. However, internet research is pressing forward; researchers are producing great work and some of that work is found in this volume.

About This Volume

This handbook has been a long time coming. Each of the editors had significant challenges occur during the editing of this volume – from deaths in the family to severe injuries to career challenges – and for these reasons this volume took over two years longer to complete than it should have. We want to thank those that participated in it. The volume is based on two editorial rounds: An open call for contributions occurred first and from which we accepted around fifty percent of the submissions. In the second round, we invited several more papers from a wide variety of colleagues. Over time, some of the papers were withdrawn or not completed. We also never really drew enough interest in the third section we originally proposed, a section which was meant to encapsulate materials critical in the field. The chapters that were accepted from that area were included in either the “Foundations” or the “Futures” section, depending on where they fit best.

Even if we have lost a few potentially significant papers because of life and work circumstances, we believe that this volume will still serve as an effective way to understand elements of the field of Internet research. For some people, there will be significant elements missing from this volume. Those can probably be found in either the first volume of the *International Handbook of Internet Research* or in one of the several other books that the editors have produced. If still other topics are missing, they might also be well covered in *The Handbook of Internet Studies* by Charles Ess and Mia Consalvo or *The Oxford Handbook of Internet Studies* by Bill Dutton (Consalvo and Ess 2011; Dutton 2013). There are also quite a few other handbooks from reputable presses and editors on related topics. We cannot list all of them, but given all the handbooks available, the field is certainly on solid foundations.

The two volumes that comprise the *International Handbook of Internet Research* are not intended to compete with the other handbooks but are intended primarily to deal with and present some current questions in the field of Internet research. Our mode of presentation is a slight variation from the other handbooks, which tend to have longer, more focused introductions with significantly more craft in the composition of the book, whereas this series of handbooks is intended for each chapter to be able to stand alone outside of the handbook as well as fit into in the larger handbook. Our handbooks are intended to be much more like the idea that a book is the sum of its parts and less like a series of essays that have been crafted to fit into the book. Our strategy has been remarkably successful for the first volume as some of the individual materials have had several thousand citations, whereas the book in its entirety only has a reasonable number, which is to be expected. So, while we have compiled this selection of chapters, we do not think that the order necessarily matters, nor do

we think it should matter in this volume; rather what matters for us is the excellence and contributions of the individual chapters.

Foundations Section

The “Foundations” section of this book is not intended to cover comprehensively the entire foundations of Internet research. The chapters here are intended to provide some foundations of the field. What they have in common is that they all approach a method, a theory, a perspective, a topic, or part of the field that has been and is still an area of significant Internet research. They engage with the current and historical scholarly literature through extended reviews and as a way of developing insights into the Internet and contemporary Internet research. The extent to which individual chapters perform all these tasks varies, but as a whole, they give a solid foundation for significant parts of Internet research.

The “Foundations” section has chapters on affect and emotion, online chat, big data in Twitter, big social data, digital activism, digital folklore, web history, social networks, Internet art, networked media, online field theory, affordances, research programs in Internet studies, YouTube, live streaming, research ethics, Anonymous, feminized digital sociality, qualitative methodology, online politics, and other topics in combination with these. By including these topics, we believe we have covered significant elements in current research in this section, but obviously there is even more to cover. The depth of coverage of any given topic is somewhat limited, but you can get a good start on any of these topics and more in this section, especially when taken in conjunction with the “Futures” section and the previous volume of the handbook.

This section focuses specifically on several topics we believe are of interest to many researchers and students now. It goes in depth through several chapters on big data. It covers the media logics of the Internet in several other chapters. Also, importantly, this section engages questions of digital history and folklore, both in individual chapters about specific technologies with histories of research and in general chapters about histories. Almost all Internet research is somewhat historical, in that we are mostly investigating past events, even if the past is fairly recent past. This focus helps to clarify some of the issues dealing with how we can use Internet-based data to understand our social and political world. Interestingly, we also have several chapters in this section that deal with cyberinfrastructure and science on the Internet, which has been an engaging area of study in the Society for Social Studies of Science for years. Finally, one more unifying theme of the “Foundations” section is activism. The Internet has many activists and groups advocating various forms of social change. Several chapters deal with these topics in exciting and engaging ways.

Each of the chapters in this section is an exciting addition to the field. As a whole, they draw on a large body of scholarship that grounds and drives the field forward, much as these chapters individually will. As we have seen from the first volume,

which is still extremely useful 12 years after it was produced, these chapters make contributions that will anchor and promote future development of the field. They are foundational for parts of the field of Internet research.

As noted above, these themes are not the themes of Internet research in general, but they do provide pathways forward, and they might be better conceived of as desire paths instead of any formal organization. What you will find is that throughout, each chapter in its own way engages methods, ethics, and tactics of research. Follow your path through these chapters; do not assume they talk to each other, though they frequently do in exciting ways. We believe that you will learn something new or interesting from each chapter you read, and that each of them could at some point serve as inspiration for your own Internet research.



Science and Medicine on YouTube

2

Joachim Allgaier

Contents

What Is YouTube?	9
Theoretical and Methodological Challenges Posed by YouTube	10
YouTube and Scholarly Communication	13
Science Communication Via YouTube	15
Health and Medicine on YouTube	20
Outlook	22
References	24

Abstract

YouTube is a particularly popular online video sharing site. It is not only used for entertainment and commercial purposes but also to disseminate and obtain information and knowledge concerning science and medicine. So far rather little is known about science and health communication via online video sharing websites such as YouTube. In this chapter the limited but growing research literature on scholarly communication, science, and medicine on YouTube is reviewed and summarized. It shows the major research developments and points out omissions and gaps of knowledge. The chapter closes with an outlook and reflects on how recent internet research ideas could be used to better understand and analyze science and medicine on YouTube.

Keywords

YouTube · Online Video · Webvideo · Science Communication · Health Communication · Scholarly Communication · Social Media

J. Allgaier (✉)

University Hospital Cologne, Research Unit Ethics, Cologne, Germany
e-mail: joachim.allgaier@uk-koeln.de

YouTube has been a phenomenal success and developing rapidly since its launch in 2005. In 2006, YouTube was bought by Google for \$1.65 billion (<http://techcrunch.com/2006/10/09/google-has-acquired-youtube/>) in stock. Today, YouTube is one of the most popular internet sites and also the second most popular search engine used after Google (See for instance: <http://www.mushroomnetworks.com/infographics/youtube—the-2nd-largest-search-engine-infographic>). According to the YouTube statistics page (<https://www.youtube.com/yt/press/statistics.html>), YouTube has over a billion users – almost one-third of all people on the Internet – and each day these users watch a billion hours of video, generating billions of views. More than half of YouTube views come from mobile devices. YouTube has launched local versions in more than 88 countries. YouTube can be navigated in a total of 76 different languages (covering 95% of the Internet population).

Various surveys have demonstrated that YouTube is a popular information source about science, health, and medicine (e.g., Allgaier 2016). High reading levels are required to comprehend web-based textual health and science information (e.g., Berland et al. 2001). This might be one reason why citizens and (potential) patients look for information on scientific and health-related issues on video-sharing websites such as YouTube. However, YouTube and other online video-sharing sites have also become important channels for science PR, science popularization, and all other forms of science communication (Allgaier 2016; Geipel 2018). This does not only concern the Western world. For instance, it has been reported that the Russian website ПостНauка (<http://postnauka.ru/>) (pronounced PostNauka, meaning “Post-Science”) very successfully uses YouTube videos to give science a human face, to communicate science to the public (Van Herpt 2013). PostNauka regularly publishes videos of conversations with scientists, researchers, and thinkers about current scientific concepts, theories, and ideas. After the successful launch in Russia, an international spin-off in English has been founded in December 2013 under the name Serious Science (<http://serious-science.org/>). It is also based on videos of conversations with researchers and scientists and aims at spreading scientific ideas among various publics. The concept of the site is that (re)interpretations of journalists are avoided by cutting off the journalistic mediation and translation processes, and scientists are given the opportunity to share their views and ideas directly with the audience.

Many more examples of science communication can be found on YouTube and other online video-sharing sites, and they come in different forms and guises. In Germany, for instance, the online science community Neothesus (<https://www.youtube.com/user/Neothesus>) uses web videos to initiate new forms of dialogues between science and society. Scientists and other experts use the portal to ask questions about science and research of societal relevance and their colleagues, other experts but also members of the public are asked to engage and participate by posting video-responses, thoughts, and comments, so that public elaborations and discussions can take place via the online-video format.

However, at least some scientists and researchers are also making use of YouTube and online video-sharing themselves, for instance, for exchanging and sharing data, recording and documenting experiments, and demonstrating particular methods or

the working and functional principles of the results and products of their research. For instance, researchers at the Institut Pasteur in France created a web application they called MouseTube (<https://mousetube.pasteur.fr/>) (based on YouTube principles and technology) that allows the exchange and sharing of mouse vocalization recording files.

The Journal of Visualized Experiments (JoVE) (<http://www.jove.com/>) was one of the first academic publications that published peer-reviewed videos (See also: <http://crastina.se/web-videos-in-science-and-research-communications/>) of scientific experiments in order to increase reproducibility of the methods and techniques applied. One of the founders of the journal, CEO Moshe Pritsker, is convinced that video publishing is going to change many aspects of scholarly and academic communication. He recently stated in an interview:

Today the text-based method of scientific publishing is not sufficient to transfer the knowledge and that's the root of the problem. Eventually I think video will become one of the main methods of scientific publishing. (Gibney 2013)

Furthermore, Normile (2012) reported that an anonymous whistleblower had created a video and used YouTube to assert and illustrate claims of scientific misconduct by a prominent Japanese researcher. And it is more than likely that the use of YouTube and online video clips is also going to increase in education and teaching in schools but also in institutions of higher education (e.g., Snelson and Perkins 2009; Snelson 2011).

Although a lot of research has been done on how science and medicine is represented in the mass media, surprisingly few research articles are available yet on science and medicine on YouTube (and other online video-sharing sites) (e.g. see León and Bourk 2018). The aim of this chapter is to review the limited but growing research literature on science and medicine on YouTube and to distill and synthesize some methodological and topical developments, progressions, and insights. Major research developments will be shown, and omissions and gaps of knowledge will be pointed out. The chapter will also reflect on how recent internet research ideas could be used to better understand and analyze science and medicine on YouTube.

What Is YouTube?

But before we dive deeper, it probably makes sense to ask some general questions about the nature of YouTube itself. It is not very easy to answer the question what YouTube actually is: YouTube is in fact many different things. It is a commercial operation and a business model; being owned by Google, the business of YouTube is the distribution online video-sharing (Burgess and Green 2009). It does not produce media content itself but makes use of the content of its users and distributes it. On the other hand, YouTube is also seen as a spearhead of participatory culture (Burgess and Green 2009), and it allows not only to hear the privileged voices of industry or of the government, or the expert's or professional's view or opinion but entirely new

constellations are possible, when, for instance, the little man or woman from the street, citizens' groups, or patients can also make their voices heard via YouTube.

So far only very little is known about how various scientific and biomedical experts, health and science communicators and journalists, but also ordinary internet users, citizens and patients make use of YouTube to communicate, collaborate, and engage with each other. However, here it is very important to understand that YouTube is not only a valuable "cultural archive" of video content but also a social online community in which some users subscribe to the channels of other users and react in the form of video responses, and other people comment in text, recommend, and share contents, and so on (Burgess and Green 2009). Snickars and Vonderau (2009) go one step further describing YouTube as a platform, an archive, a library, a laboratory, a database, and a medium at the same time. Kavoori (2011: 3) therefore suggests "to see YouTube as much more than a website – it is a key element in the way we think about our on-line experience and (shared) digital culture."

Theoretical and Methodological Challenges Posed by YouTube

YouTube seems to matter in many ways and on various levels. However, it is difficult to grasp it in its entirety, and this difficulty also challenges media, internet, and communication research. Media researcher Paul A. Soukup (2014: 25) therefore concludes in a comprehensive review on literature on YouTube by writing:

Communication research does need to grapple with YouTube but it also needs to refine the tools and theories to help understand it [...] It's wildly popular. It shows that ordinary people have things to communicate. It challenges ideas of a mass audience. It cuts across categories – it is not simply a video-sharing site; it is more than a social media site; it is more than a communication channel; it is more than a place for creativity; it is more than a place for semi-private sharing; though it is all these things. The YouTube experience will demand a rethinking of a great deal of communication theory. [...] Perhaps YouTube is simply too big for one set of theoretical concepts. [...] YouTube needs more communication research.

Here Soukup (2014) stresses a couple of noteworthy points. In his eyes, academic research on YouTube is still in its infancy. He also sees creative and productive new roles of audiences in the media and communication infrastructure, for instance, by pointing to the constant audiovisual recontextualizations of content that is posted on YouTube, a fact that is sometimes also being referred to as Remix or Mashup Culture (e.g., Marek 2013; Fagerjord 2010). Soukup sees many interesting forms of educational uses of YouTube and also new forms of journalism that are emerging on and via this online video platform. However, what is particularly important and relevant for this chapter is that he thinks that YouTube can also be an innovative lens through which various aspects of society can be observed, and therefore, YouTube can also be used as an insightful data source for all kinds of research. In fact, he writes that particularly researchers interested in public health and health communication have already found a wealth of online material on YouTube that they can usefully investigate (Soukup 2014: 24).

Another way of understanding YouTube is offered by cultural studies scholar John Hartley (2012). Hartley describes the internet as a mixture of “probability archives,” with YouTube being the prime example. This means that you don’t know what content you will find once you start searching there:

The status or even existence of individual objects is uncertain. They may be real or unreal, true or false, fact or fiction, original or copy. The *productivity* of the overall archive is *unmanaged* – knowledge is uploaded, archived, organized, debated, and deleted by myriad users, not by minority expertise. (Hartley 2012: 160)

The content of YouTube is evolving and dynamic but not reliable:

YouTube is an unreliable archive. You never know what you’ll find or not find, and the archive changes constantly. A probability archive is random, complex, uncertain, indeterminate, and evolving as to its contents at any given moment. But it contains *much* more information than a regular archive can manage. (Hartley 2012: 167)

Video-sharing websites such as YouTube must be understood as social media sites where no editorial selection and quality assessment is taking place and also potentially harmful and inaccurate information on science and biomedical topics can be disseminated. For instance, Allgaier (2013, 2016) has demonstrated that not only scientific and biomedical organizations use YouTube to post video content on science but anti- and pseudoscience activists, conspiracy theorists, and alternative healers have also embraced YouTube as tool for disseminating and promoting their worldviews, also for attacking mainstream scientific and biomedical positions.

Following Hartley (2012), it is uncertain what kind of content is stored on YouTube, and what the quality of the information is. Even when one is looking for scientific and medical terms and issues, it might still be the case that the resulting videos that come up as search results are parodies and music videos, advertisement and commercials, but they can also be academic lectures and reports and clips from professional TV stations. In this sense, it is likely that issues and topics related to research, science, and health issues are also turned into various circulations of popular cultural formats, once they are present and debated on YouTube (Beer 2013).

Another problem that often builds up on the question of content is the question of searching: the over-reliance on particular search engines (e.g., Google) and the increasing personalization of internet searches may not only help finding the information and content one is looking for, but by privileging some results over others, they are actually also hiding other results and making it much more difficult to find particular sorts of content. This problem is exacerbated by the personalization and individualization of searches, which results in more of the same kind of content being shown to users (the so-called “filter bubble” or “echo chamber”) and often the search results are not transparent at all (e.g., Pariser 2011).

At the same time, some actors, and forms of knowledge and information, are privileged through search engines, for instance, if organizations are practicing search engine optimization. Rogers (2013) describes the results of the searches having a

form of “algorithmic authority” – thereby influencing which links are considered being relevant and important. The personalization of searches that base the results of searches also on individual search histories led to the result that two different YouTube users searching for the same term on YouTube will likely get different videos as results of their previous search histories.

Such issues pose big methodological problems for the systematic and controlled sampling and study of YouTube and the question how the unreliable and evolving content of YouTube’s probability archive could be investigated systematically. And it is also not clear how the users find the clips they watch on YouTube. It is as likely that they find the link to a particular YouTube video in a conventional news report or an email, or that a particular video was embedded in a blog or a Facebook post, or that it has been recommended in a tweet that has been retweeted many times by a myriad of users. It seems that not only studying the fluid content poses a big challenge to the systematic study of science and medicine on YouTube. Many more aspects are to be considered. For instance, it is also of importance to study the production of YouTube content and the intentions and ideas of the actors who are uploading video content. Here we must, for instance, distinguish between professional media producers and amateur internet users, although the boundaries seem to be blurring here too. And obviously, it is also very important to study how various publics use YouTube and how they perceive and react to the videos they encounter on YouTube. However, as mentioned previously, in many of the works on the participatory culture of social media, it is difficult to maintain a clear divide between media producers and consumers (e.g., Brake 2014). In the YouTube arena, the YouTube users may also be video producers themselves and react by posting video responses, which are quickly shot and uploaded via smartphones or other mobile devices, or they may click a like or dislike button, share the content via different social media platforms, bookmark the video, leave a nasty comment, or produce a spoof or parody video of the original clip, and so on.

In Kavoori’s (2011) work on reading and understanding YouTube, he adopts an explorative stance and position on YouTube videos within the larger architecture of YouTube. In this approach, it is suggested to examine not only the primary video (foundationality) but also the surrounding videos (referentiality) and the comments, etc. (participatory) in order to, e.g., “read” a video’s story and determine its genre.

Kavoori (2011) therefore formulates a set of questions that we might want to ask and use as guidelines if we are to study science and medicine on YouTube. An important first question in this context is whose stories are being told on YouTube, for instance, whether they are professionally produced stories by well-equipped professional organizations or user-generated content made with cheap home equipment.

Kavoori breaks down the question what a story on YouTube actually is in further questions of architecture (primary video, video recommendations from YouTube, actions and reactions by other users), use of YouTube videos (e.g., for entertainment, information seeking, learning), storytelling (for instance, particular genres or styles, such as celebrity or shopping videos or journalistic reporting), and impact of the

story (reception and effects, for instance, if a video led to many remix and mashup versions of the original version).

Posing this set of questions might be seen as ideal-typical methodology on which future investigations of YouTube could be modeled and build up. However, it seems fair to say that so far no studies on YouTube have been published that addressed all the aspects and questions posed in Kavoori's (2011) foundational text. Also Kavoori himself has so far only managed to study one aspect in detail and that was the question of typical genres of popular videos on YouTube (Kavoori 2011).

YouTube and Scholarly Communication

Now let's have a look at what has actually been investigated so far concerning scholarly communication via YouTube. The high potential of social media sites such as YouTube as communication tool in the sciences has already been noted many times. For instance, Osterrieder (2013) shows how YouTube is made use of in plant sciences and here she stresses strengths such as rapid dissemination and amplification of content, as well as the ability to have informal exchanges.

Many scientific journals now also offer the option to upload video files as supplementary online materials to their published articles and video abstracts of journal articles also seem to be rising. Spicer (2014) has conducted a study on video abstracts in scientific journals and he found a growth of video abstracts in scientific scholarship in general. Often these were hosted on both, the journal's own website but also on YouTube. However, using a case-study approach, Spicer (2014) found that users predominately accessed the journal's hosted video abstracts and only rarely the ones on YouTube. Spicer (2014) also noted the early adoption of video abstracts in fields such as medicine, biology, chemistry, math, and physics, and he described video abstracts as very helpful opportunities to communicate complex information that could not be communicated in the same stimulating way in print. Furthermore, the videos could also be used as marketing tools for the articles.

Similarly, Komada et al. (2009) concluded in an early positive assessment of the aforementioned peer-reviewed online video journal JoVE, which was founded in 2007, that the video format of the journal will likely increase the reproducibility and transparency of experimental studies and thereby contribute to scientific progress.

Another study tried to assess the impact of academic online videos. Thelwall et al. (2012) found that the number of views that academic videos got on YouTube tended to be rather low compared to other YouTube videos, and the authors cautioned that the numbers of views in the YouTube context are not very meaningful scientifically and should rather not be used as alternative metric ("altmetric") data for assessing scientific quality. The popularity of YouTube science videos could be based on all kinds of variables (e.g., entertainment value, particular topic of research, visual images) that are not necessarily related to its scientific content and value. In other words, a video that is aesthetically pleasing, very entertaining, or funny might receive far more views on YouTube than an excellent but sober scientific video that presents and demonstrates a scientific breakthrough.

Kousha et al. (2012) have investigated how YouTube videos were cited in academic publications. They found a steady upward growth in citing online videos in academic publications from 2006 to 2011. However, they also found predictable disciplinary differences: While authors in the sciences, medicine, and health sciences either cited videos with direct scientific (e.g., laboratory experiments) or science-related contents (e.g., academic lectures), authors from arts and humanities tended to cite videos with art, culture, and history themes, and in the social sciences, most of the videos were related to news, politics, advertisements, and documentaries. Interestingly, most YouTube videos were cited in the humanities, followed by the social sciences. The authors concluded that YouTube has the potential to genuinely enhance scholarly communication but cautioned that readers should take a more critical attitude towards YouTube sources than towards peer-reviewed sources.

A very popular format that is located at the interface of academia, research, and society are the so-called TED conferences (TED = Technology, Entertainment, Design), which run under the slogan “Ideas Worth Spreading” and which started in 1990 as an regular event (<https://www.ted.com/>). Speakers at the TED and TED spinoff conferences often included scientists and researchers but also celebrities, artists, politicians, CEOs of IT-companies, and many others. The short talks from the conferences are always video recorded and published via the TED homepage but also on their YouTube channel. Videos of TED Talks are immensely popular, watched worldwide, and said to be one successful strategy for thinkers and researchers to influence public perceptions of their research and to get public support and visibility.

Sugimoto and Thelwall (2013) used a range of bibliometric (citation) and webometric (usage and bookmarking) indicators to empirically examine TED videos and their impact. They found that the impact of TED videos could mainly be seen in the public sphere but hardly in the academic world. However, they also found that science and technology videos presented by academics were more often “liked” than those by nonacademics, showing that academics are not disadvantaged per se in the context of this new media environment.

In another study on TED videos, Sugimoto et al. (2013) found that TED presenters were predominantly male and nonacademics. However, videos by academic presenters received more comments and were “liked” more often on YouTube than other videos. They also found that, in general, academic presenters were established faculty members from the United States-based institutions and were already cited more often than average in their field of study. However, giving TED Talks generally did not correlate with higher number of citations afterwards, so the authors concluded that giving TED Talks may help to popularize research, but it does not seem to promote the work of scientists within the academic sphere.

Following up on this kind of research, Tsou et al. (2014) conducted an analysis of comments left on both the TED website and the YouTube platform. They found that the comments on YouTube rather discussed the characteristics of a speaker, while comments that were posted directly on the TED website were more likely to discuss the content of the talks. Tsou et al. (2014) also found that in general, the comments made were more emotional when the presenter was a woman (by leaving positive

and negative comments). Consequently, the authors concluded that the two spaces were not equitable and the discourses in the comments varied by platform and speaker characteristic.

An interesting intercultural perspective on TED Talks was provided by Pan et al. (2015). Their study investigated the impact of TED Talks videos on YouKu, a popular Chinese video portal, and compared it with YouTube. Their findings demonstrated that the topics of TED Talks varied in their impact: topics on entertainment, psychology, and philosophy received more views and likes, whereas art, design, and natural sciences such as astronomy, biology, and oceanography attracted fewer comments and bookmarks. Topics on global issues and technology were more popular on the Chinese platform YouKu, whereas topics on entertainment and psychology or philosophy were more popular on YouTube. The authors also analyzed the popularity distribution of videos and the audience characteristics of YouKu and found that women were more interested in topics on education, psychology, and philosophy, whereas men favored topics on technology and natural sciences such as astronomy, biology, and oceanography.

Science Communication Via YouTube

So far peer-reviewed literature on the public communication of science on YouTube and other online video-sharing sites is still rare and only gradually emerging. Welbourne and Grant (2015) have examined factors that affect channel and video popularity in science communication on YouTube. In the introduction of their article, it is noteworthy that the authors were also mentioning the importance of the YouTube video recommendation system for the popularity of some videos compared to others. Welbourne and Grant also emphasized that it was hard to find any studies that have studied science communication videos specifically.

The authors of this contribution were particularly interested in the question which videos and video channels are particularly popular and why this is the case. Video channels were distinguished as run by professionals and run by amateur users. The popularity of YouTube content was not determined by the quantity of videos per se but by the actions and engagement of the YouTube users. Welbourne and Grant (2015) have randomly sampled videos from 1000 YouTube channels listed in the categories “Education” and “Science and Technology.” Additional data were coded for each channel and various popularity metrics were extracted for all videos simultaneously.

Finally, they sampled 411 YouTube channels to obtain 39 science communication channels that they needed for a statistically meaningful analysis. These consisted of 21 professionally generated and 18 user-generated channels. Ten videos per channel were included in their dataset.

They found that the professional channels had posted many more videos than the user-generated channels. However, the user-generated channels had significantly more subscriptions and channel views than the professional ones. The channel views were very strongly positively correlated with subscriptions and only

moderately positively correlated with the number of videos on a channel, but there was no correlation between views per video and number of videos posted on a particular channel.

Welbourne and Grant's (2015) analysis of video content factors showed that videos that contained a regular science presenter generally had male presenters in both types of channels. Furthermore, videos that had a regular science communicator, in both channel types, had significantly more views than videos without regular presenters. Also, male only professionally generated content was watched more often than professionally generated content that had male and female presenters. No correlation was found between number of views and video length.

The authors concluded that user-generated content seems to be far more popular among viewers than professionally generated content in the area of science communication. In general, the results of this study showed that amateur users that are communicating science via YouTube do not need to fear the professionally generated content made by financially well-equipped organizations. YouTube users seem to be happy watching amateur science videos but their makers need to engage with their audience.

Welbourne and Grant (2015) asserted that how users identify trusted sources on the Web 2.0 does not necessarily depend on high production values but also on issues such as communicator experience, impartiality, affinity, accessibility, and whether a content creator is embedded within trusted social networks, or if they manage to foster meaningful connections with their audience. Using *YouTube* for science communication has various advantages: it does allow passive consumption of the users, but it also allows building communities and establishing dialogues with various audiences (Erviti and Stengler 2016).

However, it should be noted that when it comes to science communication on YouTube, it is not easy to draw an exact line between professional and user-(amateur) created content. For instance, Muñoz Morcillo et al. (2016) interesting study on popular science web videos points to a notable professionalism among science communicators independent of institutional or personal commitments. Science YouTubers such as *Veritasium* (<https://www.youtube.com/user/1veritasium>), *VSAuce* (<https://www.youtube.com/user/Vsauce>), or *SciShow* (<https://www.youtube.com/user/scishow>) reach many million viewers on YouTube and also have millions of subscribers to their video channels. Lovell (2015) observes: "With hundreds of millions of video views, the new faces of science communication are lighting up the web and reaching more young people than Carl Sagan and Neil deGrasse Tyson combined."

YouTube is also a site on which science and research meet with popular culture (Allgaier 2016). For instance, a large spectrum of music videos related to science and research can be found there, and some of them could potentially also be used as valuable tools for science communication and educational purposes (Allgaier 2013; Austen et al. 2017). Music and music videos about science and research are collected in a specialized database base called Sing About Science (<http://singaboutscience.org/>) which catalogues more than 6000 science and math songs including more than 1000 with videos (see Allgaier 2012 comments).

One contentious science-related issue that also provoked a lot of reactions on YouTube and many other social media channels is the issue of climate change. Shapiro and Park (2015) have examined public responses to the science of global warming and climate change on YouTube. To do so, they applied a mixed-method analysis of YouTube videos. They had a look at the ten most-viewed videos for the search term “global warming” on the YouTube website. In general, they found that these videos could be divided into three broad categories: videos calling for action to address global warming, videos calling for action to address deficiencies in the science or politics of global warming, and few videos addressing other issues not related to the first two categories. Shapiro and Park (2015) were particularly interested in how people responded to claims about the science of climate change and how YouTube users commented on the videos that questioned the science of climate change.

A semantic analysis of the related video comments found that the majority of comments politicized the issue of global warming and the authors expounded that multiple claims were made that the science in the videos was wrong and that there were attempts to update the science – from different point of views – by directing other users to newspaper, magazine, and academic journal articles located outside YouTube. However, the results of this study also revealed that most of the comments were in fact unrelated to the video where the comment had been placed. There were virtually no references in the comments to specific facts that were presented in the videos. Therefore, the authors concluded that the post-video comment forum in general functioned as a vehicle for discussing climate change per se and rather not to specifically address the video next to which the comment was placed. The authors therefore deduced that YouTube users seemingly targeted videos by theme rather than by its specific content when engaging and making use of the commenting section of YouTube.

Porter and Hellstein (2014) also investigated participatory dynamics on YouTube in the case of “climategate” and came to somewhat contradictory conclusions. In November 2009, the emails of climate scientists of the University of East Anglia have been hacked and published on the web without the consent of the concerned scientists. This event, which had also attracted considerable media attention, was named “climategate” and it contributed to the further polarization of opinions on climate change, because claims were made that scientists were hiding data or manipulating results in climate change research (which later turned out not to be true).

Porter and Hellstein (2014) applied a multideterminant framework and conducted an interpretative analysis of videos and comments. Their results showed how public responses to “climategate” were scripted around three dominant master frames. They had analyzed the two most often watched videos on “climategate” and analyzed 600 comments chosen in three different time periods, in order to analyze the durability of frames over time. The three primary master frames they found in the quotes were: political scam, media hype, and scientific fraud. The two most dominant frames were about politics and the media and therefore precisely mirrored the master frames they found in the two corresponding videos.

The authors interpreted the reinforcing comments as part of an information cascade where the users make decisions and comment based on the comments and decisions of others in social networks. In this context, they described the relationship between videos and commenting frames as reinforcing each other. However, they also noted whole chains of comments where some users reacted to the comments of other users and these chains of comments constituted a form of sparring between two or more users. Nonetheless, also at the end of such exchanges of views and comments, these exchanges ended with no change of position. So far, however, it is clear that more research is needed to get a better understanding of how user comments and contents of the YouTube videos are related to one another. Concerning the issue of climate change, it should also be mentioned that some work has been done on the role of YouTube in political online activism surrounding the 2009 United Nations Climate Change Conference in Copenhagen (Askanius and Uldam 2011; Askanius 2012; Uldam and Askasius 2013).

Spartz et al. (2015) followed another approach and were interested in the question if YouTube viewers in the United States perceived the salience of climate change differently depending on the numbers of quantitative cues, such as the number of views a YouTube video on climate change had gained. To investigate this matter further, they had adopted an online experimental approach, in which participants from a student population in the study were shown the same edited YouTube video on climate change but randomly placed in treatment conditions showing them either “high views” (1,367,454 views) or “low views” (723 views). As a result, the authors of this study found that the students exposed to the high number of views condition were significantly more likely to perceive that global warming is a salient issue to most Americans.

Additionally, the study also investigated whether the level of self-monitoring (e.g., assessing the social environment and adjusting one’s behavior) would be related to the perceived importance of global warming to oneself or to all Americans. Here, the results indicated that self-monitoring was indeed related to higher levels of importance assigned to the issue by the participants of the study. However, the results showed no interaction effect between self-monitoring and actual number of views stimulus on the two variables perceived importance of climate change to most Americans and oneself. The authors concluded that people could indeed be influenced in their perception of societal issues, such as climate change, and the assessment of their importance by numerical cues in social media contexts. Seemingly, even such a minor cue as the descriptive number of views a YouTube video achieves could have an impact on how people assess the salience of the content of the video.

De Lara et al. (2017) have studied online videos on climate change, which they found using the Google video search engine, and compared television and web formats. They found that online videos that have been designed to be disseminated on the Internet were more likely to generate visits than those that were produced specifically for television.

Jaspal et al. (2014) were interested in the examination of another controversial topic on YouTube: Fracking – the extraction of shale gas through hydraulic

fracturing. This method of geological resource extraction is still highly controversial for its environmental and economic cost and benefits and other side effects but has been already deployed in the United States on a large scale, and there are debates in many countries whether or not it should be used too to extract gas. Jaspal et al. (2014) have examined the 50 most viewed YouTube videos about “fracking shale gas” using qualitative thematic analysis. The 50 videos analyzed were a heterogeneous collection of videos, differing in format and provenance, and there were both negative and positive ones in tone. The spectrum of the videos ranged from news reports and documentaries to home-made videos and PR and marketing materials.

The results showed that the analyzed YouTube videos did not only discuss environmental and economic costs and benefits but also social and psychological impacts on individuals and communities. The authors noted that the social and psychological impacts of fracking on those involved in it or those living in the vicinity of fracking sites so far had hardly been noticed or even studied. The value of studying YouTube videos therefore was to make these voices heard as well and to provide first-hand insight into the social and psychological dimensions of fracking and give social researchers fine-grained qualitative data on how this new resource-extraction technology led to various forms of identity threats.

Harries et al. (2014) raised a similar point in their study on direct to consumer genetic testing. It is well known what the most prominent provider of home genetics services – the Google-owned company 23andMe (<https://www.23andme.com/>) – claims about the use, business, and practice of personal genomics (e.g., Prainsack 2014). However, it has been far more difficult to obtain data from the point of view of the users of this service, because the information who used this service was generally withheld by the company. Nonetheless, many users also documented their experiences with using the service of 23andMe, how it worked, why they used it, what the results were and how they dealt with it, and why they were curious about their own DNA in the first place, in the form of amateur videos on YouTube. For science and technology studies scholars interested in the consumer use of genetics services and the impact of biotech on society, such videos constitutes a very precious data source.

The authors studied 20 YouTube videos made by users of 23andMe, including surrounding online content, such as other YouTube videos, hyperlinks, and comments and applied thematic narrative analysis to analyze them. Harries et al. (2014) found that the videos narrated an emerging ambiguous state of illness that is tied up with direct-to-consumer genetic technologies, which they refer to as “autobiographies,” meaning the study of, and story about, one’s own organism. The narratives of “autobiographies” differed from illness narratives. They were not stories about states of sickness and suffering but narratives about emerging states of illness, biological ambiguity, and imagined biological futures. The authors concluded that their analysis of YouTube videos about direct-to-consumer genetic testing has contributed novel insights about illness narratives, digital narratives, and patients-in-waiting, that the users of 23andMe seemed to become by using this service.

Health and Medicine on YouTube

The aforementioned research on “autobiographies” and other topics have already demonstrated that it is generally not possible to always clearly distinguish between videos on health and medicine or science and research. In terms of conventional journalistic mass media, it is fair to say that health and medicine topics are generally the ones that receive most attention by editors and the public in the whole spectrum of news on science and research (e.g., Allgaier 2014). However, reviewing the academic literature on YouTube a picture emerges that shows that research results on health and medicine topics on YouTube were also among those published most often (see also Soukup 2014; Snelson 2011). The literature and research on medicine and health on YouTube and health communication via YouTube has already become too vast as that it could be reviewed here in its entirety. Instead, some key issues have been selected to highlight a couple of general points of importance.

One question of crucial importance, at least from the point of view of biomedical institutions, is the question if YouTube provides users and (potential) patients with accurate and helpful information or if the contents of the videos are potentially harmful and misleading. The published results are somewhat ambivalent here but it seems to depend on the precise topics, issues, and medical conditions that people are looking for and which search terms are used (e.g., Madathil et al. 2014). Steinberg et al. (2010), for instance, had conducted a study on YouTube as source of prostate cancer information and found that even though some robust and helpful information could be found on YouTube, overall the video platform would be an inadequate source of prostate cancer information for patients.

An early study on immunization and vaccination by Keelan et al. (2007) found that less than half of the videos on vaccination or immunization analyzed were positive about immunization and vaccination. Vaccine-critical videos, however, had better ratings and were viewed more often. The information provided in the critical videos often contradicted the medical reference standard. The authors therefore cautioned the medical community that physicians must be made aware of misinformation on online video-sharing sites and stated that they should be prepared to respond to patients who obtain low-quality health information from internet-based sources. Much of the research that followed reemphasized that point (e.g., Abboudi et al. 2016; Gupta et al. 2017).

Briones et al. (2012) did a content analysis of YouTube videos on Human Papillomavirus (HPV) Vaccination. They analyzed 172 YouTube videos, most of which were news clips or user-generated content. The majority of the videos were negative in tone and disapproving of the HPV vaccine. In addition, negative videos received more “likes” by the viewers than positive or neutral ones. Many of the YouTube videos also pointed to conspiracy theories and suggested infringements of civil liberties. However, Ache and Wallace (2008) some years earlier had also conducted a study on Human Papillomavirus (HPV) Vaccination on YouTube and they had found that three quarters of the 146 YouTube videos they studied portrayed HPV vaccination in a positive light. It seems that such results can vary drastically over time.

Pandey et al. (2010) found that the majority (61.3%) of the YouTube videos they studied provided useful information on the H1N1 Influenza (swine flu) Pandemic, whereas 23% of the videos were misleading. Sood et al. (2011) used various medical search terms to find and examine YouTube videos about kidney stone disease. More than half (58.3%) of the videos they found on YouTube had useful information, and 18.1% of the video were misleading. Useful videos had far more viewers than misleading ones, and videos posted in the YouTube channels from universities had provided the best and most accurate information.

Venkatraman et al. (2015) conducted a study in which they compared the information about a possible link between vaccines and autism on Google, YouTube, Wikipedia, and the scholarly database PubMed. According to the scientific and medical community, a link between Measles, Mumps, and Rubella (MMR) vaccination and the development of autism could not be confirmed. However, it was claimed to exist in the past in a publication in a medical journal, which had later been retracted. Boulevard media and internet stories had reported the wrong finding and kept insisting that the link exists, even after the article had been retracted. Consequently, childhood vaccination rates decreased and preventable measles outbreaks have been reported in the USA and in various places in Europe.

Venkatraman et al. (2015) have compared four important internet channels by degrees of freedom of speech and found that freedom of speech is highest on YouTube, since almost anyone can upload videos on this site, and the likelihood that these stayed on the site, and could be seen by future users was higher than with content on Google, Wikipedia, or the scholarly database PubMed. The authors found that only 22.3% of the YouTube videos they studied were pro-vaccine, whereas 74.3% of videos were anti-vaccine and reported a link between vaccines and autism, contradicting the academic consensus. They also found that 9% of the anti-vaccine videos made use of Hollywood celebrities, and several of the titles of the videos suggested that there was a conspiracy going on to suppress anti-vaccine views.

The anti-vaccine videos were longer than the pro-vaccine videos on YouTube. The other three internet channels had significantly fewer results that suggested a connection between vaccines and autism. The authors of the study found that greater freedom of speech (on sites such as YouTube) correlated with higher numbers of anti-vaccine views. Mainstream traditional journalistic media sources such as TV news and newspapers were mostly pro-vaccine. Wikipedia and PubMed but also Google search results also had less anti-vaccine results than those on YouTube. As a consequence, the authors concluded that academic and governmental organization should take websites such as YouTube more seriously when they want to reach the general population with health advice and scientific information. For the authors, it also followed that the increased openness of the web sometimes has a tendency to dilute the voice of science in the public sphere. Alarmist voices would have a tendency to dominate areas with free speech and they could only be modulated by editorial control.

Murugiah et al. (2011) studied videos on YouTube on cardiopulmonary resuscitation (CPR), a first aid method that is critical to improving survival in sudden cardiac death. They found that 69% of the videos showed the correct

compression-ventilation ratio, whereas 19% of the videos were incorrect in recommending checking for pulse. In this case, the videos with the best medical information were not the ones most watched. However, the authors do think that YouTube may have a potential role in video-assisted learning of first aid measures such as CPR and as source of information for CPR in emergencies. In fact, various other articles also recommended YouTube as a valuable educational tool in medical and scientific education (e.g., Jaffar 2012; Smith 2014). Murugiah et al. (2011) and Sood et al. (2011) both also stated that authoritative videos by trusted sources should be posted on YouTube for the dissemination of reliable and up-to-date health and medical information.

A recent study on the Ebola Virus Disease Epidemic on YouTube by Basch et al. (2015) found that the content of the studied videos ranged from useful information about virus transmission to harmful conspiracy theories. The authors noted that consumer videos received significantly more views than those of commercial TV stations. The authors of this study (but also of many others) recommended that government agencies, such as the Center for Disease Control (CDC), should embrace social media communication, for instance, via YouTube, to increase awareness and interest about public health issues (see also, Allgaier and Svalastog 2015).

The results of the studies on health communication via YouTube do differ, but there seems to be a consensus, that health care professionals must recognize the influence of online video-sharing websites such as YouTube on public knowledge and patient attitudes. Many authors recommend that trustworthy medical organization and institutions should be more present on YouTube and provide helpful information that patients can rely on. However, some studies also found that YouTube can act as a stage for people affected by certain medical conditions and make their voices heard and help them to express their views, even if this poses new questions about privacy and online ethics (e.g., Fernandez-Luque et al. 2009). However, from this point of view, many YouTube videos on medical conditions seem to be more sympathetic and realistic compared to the accounts of other media. In the case of video accounts on YouTube of seizures and epilepsy, Wong et al. (2013), for instance, express their hope that with more sympathetic media content about epilepsy the stigma attached to such medical conditions could decrease.

Outlook

It is still early days for research on YouTube in general and research on science and medicine on YouTube in particular. So far there are still more questions than answers, but it seems that the research on YouTube is slowly starting to unfold. Although it seems that YouTube will remain a key player in online video-sharing in the near future (Gear 2015), there are many more online video-sharing services available (e.g., Vimeo, Vevo, Dailymotion, Veoh, Metacafe, Break or Youku in China). So far only little is known about how the content, producers, and the users differ between these different sites. It also might be that particular sites emerge or already exist that specialize in scientific and medical video content. Various scientific

and medical organizations in many countries had launched their own specialized online video projects, but in general, the numbers of views remained very low.

Most of the studies mentioned in this chapter have also only examined content in English and it seems reasonable to compare content also in different languages and from different regions and cultures. So far also most studies have taken on content analysis approaches, in which rather small numbers of videos have been examined (typically those that have received the highest number of views). Here it would be desirable to develop more innovative methods how YouTube content and related aspects could be studied more comprehensively, but studies on the production and intentions of content producers and reception of online videos are also still missing (Erviti and Stengler 2016; Geipel 2018). A big question is still how users find the videos they are watching, what they are actually looking for, and how they make sense of the content they find. Additionally, trends on YouTube are changing quickly and therefore it would also be helpful to implement longitudinal research designs to get a better understanding about how production, content, and reception of YouTube videos change over time. Another open question is how YouTube and other algorithm-mediated social media sites could be sampled adequately.

When it comes to science, research, and medicine, more detailed knowledge is required about which academic disciplines and research topics are represented, which ones are absent and under-represented. When stories about science, research, and medicine are told on YouTube and other online video-sharing sites, how are they told and who is telling them? In general, it seems that scientists and scientific organizations are still reluctant to communicating via social media, and it has been found that it is often nonscientific actors that dominate discourses about science and health in social media (Schäfer 2016). Moreover, it is likely that academic disciplines differ in the use of online videos, for instance, it seems that engineers and members of robotic research communities use YouTube videos also as a sort of witnessing technology to document that their products work the way they are supposed to do (e.g., Bischof and Both 2015), while others may rather use videos to document and archive talks and lectures or conference presentations.

Very little is also known about how video content on social media interacts with other social media content; how it is shared, found, and accessed; or when it and how it connects to conventional journalistic mass media (e.g. De Lara et al. 2017). For instance, entertaining online video clips are sometimes mentioned by newspapers or in TV shows and they receive high numbers of views and might even become “viral” videos which are watched millions of times. In some cases, online science videos seem to mimic conventional TV formats, such as science documentaries, but successful science YouTubers generally seem to develop more personal styles and the issue of “authenticity” is an important one among YouTube content creators (e.g., Geipel 2018).

The point must also be stressed and kept in mind that YouTube and other online video-sharing sites are not philanthropic endeavors but business models of organization that work for profit. The educational value of online video-sharing technologies has been noted at many occasions, but the question how education and neutral learning and “best” scientific and medical knowledge go together with advertisement

and the generation of profit remains a difficult one. As could be learned from the first studies on health and medicine on YouTube, the channels of universities generally provided the most accurate and useful information. Later on a study on educational videos on YouTube by Chen and Gilchrist (2013) found that the majority of most watched videos from universities were public relation materials. Eventually, it remains doubtful whether science and medicine will ever become as popular on YouTube as gaming, comedy, fashion, or make-up videos are at the moment.

References

- Abboudi H, Mikhail M, Ghazal-Aswad M, Michael M, Pope A (2016) YouTube as a source of patient information for ureteroscopy. *J Clin Urol* 9(4):248–251. <https://doi.org/10.1177/2051415815627915>
- Ache KA, Wallace LS (2008) Human papillomavirus vaccination coverage on YouTube. *Am J Prev Med* 35(4):389–392
- Allgaier J (2012) Singing about science. *The Scientist*, 4 Oct 2012. Retrieved 21 July 2015 from <http://www.the-scientist.com/?articles.view/articleNo/32729/title/Opinion-Singing-about-Science/>
- Allgaier J (2013) On the shoulders of YouTube: science in music videos. *Sci Commun* 35(2):267–276
- Allgaier J (2014) The press and the public interest. In: Chadwick R, Levitt M, Shickle D (eds) *The right to know and the right not to know: genetic privacy and responsibility*. Cambridge University Press, Cambridge, UK, pp 165–179
- Allgaier J (2016) Wo Wissenschaft auf Populärkultur trifft. In: Körkel T, Hoppenhaus K (eds) *Web Video Wissenschaft. Ohne Bewegtbild läuft nichts mehr im Netz: Wie Wissenschaftsvideos das Publikum erobern*. Spektrum der Wissenschaft, Heidelberg, pp 15–24 Online http://www.spektrum.de/fm/976/Web%20Video%20Wissenschaft%20Version%201_02.pdf
- Allgaier J, Svalastog AL (2015) The communication aspects of the Ebola virus disease outbreak in western Africa – do we need to counter one, two, or many epidemics? *Croat Med J* 56(5):496–499. <https://doi.org/10.3325/cmj.2015.56.496>
- Askanius T (2012) Radical online video: YouTube, video activism and social movement media practices, Lund studies in media and communication 17. Lund University, Lund
- Askanius T, Uldam J (2011) Using corporate media for radical politics: COP15 activism and the case of ‘never trust a COP’ on YouTube. *Int J Electron Govern* 4(1–2):69–84
- Austen EL, Beadle J, Lukeman S, Lukeman E, Aquino N (2017) Using a music video parody to promote breastfeeding and increase comfort levels among young adults. *J Hum Lact* 33(3):560–569. <https://doi.org/10.1177/0890334417706360>
- Basch CH, Basch CE, Ruggles KV, Hammond R (2015) Coverage of the Ebola virus disease epidemic on YouTube. *Disaster Med Public Health Prep*. <https://doi.org/10.1017/dmp.2015.77>
- Beer D (2013) Popular culture and new media. Palgrave Macmillan, Basingstoke
- Berland GK, Elliott MN, Morales LS et al (2001) Health information on the internet: accessibility, quality, and readability in English and Spanish. *JAMA* 285:2612–2621
- Bischof A, Both G (2015) Counting clicks instead of citations: YouTube videos as scientific currency. Paper presented at the 14th Annual STS Conference Graz, Austria, 11–12 May 2015
- Brake DR (2014) Are we all online content creators now? Web 2.0 and digital divides. *J Comput Mediat Commun* 19(3):591–609
- Briones R, Nan X, Madden K, Waks L (2012) When vaccines go viral: an analysis of HPV vaccine coverage on YouTube. *Health Commun* 27:478–485
- Burgess J, Green J (2009) YouTube: online video and participatory culture. Wiley, New York

- Chen H, Gilchrist SB (2013) Online access to higher education on YouTubeEDU. *New Libr World* 114(3/4):99–109
- De Lara A, García Avilés JA, Revuelta G (2017) Online video on climate change: a comparison between television and web formats. *J Sci Commun* 16(01), Online https://jcom.sissa.it/sites/default/files/documents/JCOM_1601_2017_A04.pdf
- Erviti MC, Stengler E (2016) Online science videos: an exploratory study with major professional content providers in the United Kingdom. *J Sci Commun* 15(06):A06 https://jcom.sissa.it/sites/default/files/documents/JCOM_1506_2016_A06.pdf
- Fagerjord A (2010) After convergence: YouTube and remix culture. In: Hunsinger J, Klastrup L, Allen M (eds) *International handbook of internet research*. Springer, Dordrecht/Heidelberg/London/New York, pp 187–200
- Fernandez-Luque L, Elahi N, Grajales FJ (2009) An analysis of personal medical information disclosed in YouTube videos created by patients with multiple sclerosis. *Stud Health Technol Inform* 150:292–296
- Gear DP (2015) YouTube's plans for 10 more years of video domination. Retrieved 21 July 2015 from <http://www.wired.com/2015/05/youtube-future/>
- Geipel A (forthcoming 2018) *Wissenschaft@YouTube. Plattformspezifische Formen von Wissenschaftskommunikation*. In: E. Lettkemann, R. Wilke, H. Knoblauch (eds) *Knowledge in action: Wissen, Kommunikation und Gesellschaft*. Springer, Wiesbaden
- Gibney E (2013) JoVE journal's videos take strain out of new science. *Times Higher Educ*, 24 Oct 2013. Retrieved 21 July 2015 from <http://www.timeshighereducation.co.uk/news/jove-journals-videos-take-strain-out-of-new-science/2008288.article>
- Gupta A, Nissan M, Rayess H, Zuliani GF, Carron M (2017) YouTube and rhinoplasty: an analysis of the videos available online. *Am J Cosmetic Surg*. <https://doi.org/10.1177/0748806817704761>. First published online 19 Apr 2017
- Harris A, Kelly SE, Wyatt S (2014) Autobiographies on YouTube: narratives of direct-to-consumer genetic testing. *New Genetics Soc* 33(1):60–78. <https://doi.org/10.1080/14636778.2014.884456>
- Hartley J (2012) *Digital futures for cultural and media studies*. Wiley, Chichester
- Jaffar AA (2012) YouTube: an emerging tool in anatomy education. *Anat Sci Educ* 5(3):158–164
- Jaspal R, Turner A, Nerlich B (2014) Fracking on YouTube: exploring, risks, benefits, and human values. *Environ Values* 23:501–527
- Kavoori A (2011) *Reading YouTube: the critical viewer's guide*. Peter Lang, New York
- Keelan J, Pavri-Garcia V, Tomlinson G, Wilson K (2007) YouTube as a source of information on immunization: a content analysis. *JAMA* 298:2482–2484
- Komada M, Takao K, Nakanishi K, Miyakawa T (2009) The potential benefit of JoVE, an online video journal for science. *J Inform Process Manage* 52(2):69–76
- Kousha K, Thelwall M, Abdoli M (2012) The role of online videos in research communication: a content analysis of YouTube videos cited in academic publications. *J Am Soc Inf Sci Technol* 63(9):1710–1727
- León B, Bourk M (2018) *Communicating Science and Technology Through Online Video. Researching a New Media Phenomenon*. London: Routledge.
- Lovell J (2015). YouTube's rock stars of science make a splash a VidCon. *Scientific American*. 30 July 2015. Online <https://blogs.scientificamerican.com/guest-blog/youtube-s-rock-stars-of-science-make-a-splash-a-vidcon/>
- Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK (2014) Healthcare information on YouTube: a systematic review. *Health Inform J* 21(3):173–194. <https://doi.org/10.1177/1460458213512220>
- Marek R (2013) *Understanding YouTube: Über die Faszination eines Mediums*. transcript, Bielefeld
- Muñoz MJ, Czurda K, Robertson-von Trotha CY (2016) Typologies of the popular science web video. *J Sci Commun* 15(04):A02 https://jcom.sissa.it/sites/default/files/documents/JCOM_1504_2016_A02.pdf

- Murugiah K, Vallakati A, Rajput K, Sood A, Challa NR (2011) YouTube as a source of information on cardiopulmonary resuscitation. *Resuscitation* 82(3):332–334
- Normile D (2012) Whistleblower uses YouTube to assert claims of scientific misconduct. *Science Magazine News*, 25 Jan 2012. Retrieved July 21, 2015 from <http://news.sciencemag.org/people-events/2012/01/whistleblower-uses-youtube-assert-claims-scientific-misconduct>
- Osterrieder A (2013) The value and use of social media as communication tool in the plant sciences. *Plant Methods* 9:26. <https://doi.org/10.1186/1746-4811-9-26>
- Pan X, Yan E, Hua W (2015) Science communication and dissemination in different cultures: an analysis of the audience for TED videos in China and abroad. *J Assoc Inform Sci Technol*. <https://doi.org/10.1002/asi.23461>
- Pandey A, Patni N, Singh M, Sood A, Singh G (2010) YouTube as a source of information on the H1N1 influenza pandemic. *Am J Prev Med* 38(3):e1–e3
- Pariser E (2011) *The filter bubble: what the internet is hiding from you*. Penguin Press, New York
- Porter AJ, Hellsten I (2014) Investigating participatory dynamics through social media using a multideterminant “frame” approach: the case of climategate on YouTube. *J Comput-Mediat Commun* 19:1024–1041
- Prainsack B (2014) DIY genetics: the right to know your own genome. In: Chadwick R, Levitt M, Shickle D (eds) *The right to know and the right not to know: genetic privacy and responsibility*. Cambridge University Press, Cambridge, UK, pp 100–115
- Rogers R (2013) *Digital methods*. MIT Press, Cambridge, MA
- Schäfer M (2016) *Wissenschaftskommunikation online*. In: Bonfadelli H et al (eds) *Forschungsfeld Wissenschaftskommunikation*. Springer, Heidelberg, pp 275–293
- Shapiro MA, Park HW (2015) More than entertainment: YouTube and public responses to the science of global warming and climate change. *Soc Sci Inf* 54(1):115–145
- Smith DK (2014) iTube, YouTube, WeTube: social media videos in chemistry education and outreach. *J Chem Educ* 91:1594–1599
- Snelson C (2011) YouTube across the disciplines: a review of the literature. *MERLOT J Online Learn Teach* 7(1):159–169
- Snelson C, Perkins RA (2009) From silent film to YouTube™: tracing the historical roots of motion picture technologies in education. *J Vis Literacy* 28(1):1–27
- Snickars P, Vonderau P (eds) (2009) *The YouTube reader*. National Library of Sweden, Stockholm. Retrieved July 21, 2015 from http://www.kb.se/dokument/aktuellt/audiovisuellt/youtubereader/youtube_reader_052009_endversion.pdf
- Sood A, Sarangi S, Pandey A, Murugiah K (2011) YouTube as a source of information on kidney stone disease. *Urology* 77(3):558–562
- Soukup PA (2014) Looking at, with, and through YouTube. *Commun Res Trends* 33(3):3–34
- Spartz JT, Su LY-F, Griffin R, Brossard D, Dunwoody S (2015) YouTube, social norms and perceived salience of climate change in the American mind. *Environ Commun* 11(1):1–16. <https://doi.org/10.1080/17524032.2015.1047887>
- Spicer S (2014) Exploring video abstracts in science journals: an overview and case study. *J Librarian Scholar Commun* 2(2):eP1110. <https://doi.org/10.7710/2162-3309.1110>
- Steinberg PL, Wason S, Stern JM, Deters L, Kowal B, Seigne J (2010) YouTube as source of prostate cancer information. *Urology* 75(3):619–622
- Sugimoto CR, Thelwall M (2013) Scholars on soap boxes: science communication and dissemination in TED videos. *J Am Soc Inf Sci Technol* 64(4):663–674
- Sugimoto CR, Thelwall M, Larivière V, Tsou A, Mongeon P, Macaluso B (2013) Scientists popularizing science: characteristics and impact of TED talk presenters. *PLoS One* 8(4): e62403. <https://doi.org/10.1371/journal.pone.0062403>
- Thelwall M, Kousha K, Weller K, Puschmann C (2012) Assessing the impact of online academic videos. In: Widén G, Holmberg K (eds) *Social information Research*, Emerald Group publishing limited, Bingley, p 195, 213

- Tsou A, Thelwall M, Mongeon P, Sugimoto CR (2014) A community of curious souls: an analysis of commenting behavior on TED talks videos. *PLoS One* 9(4):e93609. <https://doi.org/10.1371/journal.pone.0093609>
- Uldam J, Askasius T (2013) Online civic cultures: debating climate change activism on YouTube. *Int J Commun* 7:1185–1204
- Van Herpt, Roel (2013) PostNauka presents contemporary science. Future Minds, 30 Oct 2013. Available online <http://www.vandejong.com/en/#!/en/blogs/postnauka-presents-contemporary-science/>
- Venkatramana A, Gargb N, Kumarca N (2015) Greater freedom of speech on web 2.0 correlates with dominance of views linking vaccines to autism. *Vaccine*. <https://doi.org/10.1016/j.vaccine.2015.01.078>
- Welbourne DJ, Grant WJ (2015) Science communication on YouTube: factors that affect channel and video popularity. *Public Underst Sci*. <https://doi.org/10.1177/0963662515572068>
- Wong VSS, Stevenson M, Selwa L (2013) The presentation of seizures and epilepsy in YouTube videos. *Epilepsy Behav* 27(1):247–250



Spatial Analysis Meets Internet Research

3

Marco T. Bastos

Contents

Introduction	30
Review of the Literature	33
Spatial Analysis and Internet Studies	34
Tools for Spatial Analysis	37
Methods in Spatial Statistics	40
Conclusion	41
References	43

Abstract

Spatial analysis refers to a set of techniques applied to the spatial expression of human behavior that echoes the rift between quantitative and economic geography. Despite its reliance on a statistical framework, spatial analysis has contended with methodological challenges that internet research scholars are increasingly negotiating, including the multidimensionality of the object of study, the interdisciplinary nature of the methodological approaches, and the strong dependence on computers for data collection and analysis. Together with traditional, often governmental sources of geographic information, internet-powered devices are generating a wealth of location-rich information ordinarily referred to as “geoweb.” The availability of such user-generated sources of spatial data, coupled with the rapid development of spatial analysis computing platforms, provides avenues for quantitative research on unprecedented scales and contributes to bringing these two areas of scholarship into closer contact with one another. The R environment for statistical computing offers a robust and unified

M. T. Bastos (✉)

Department of Sociology, University of London, London, UK
e-mail: Marco.Bastos@city.ac.uk

platform where spatial and internet researchers alike can rely on a multitude of packages for spatial analysis and statistical computing. Researchers can use this computational resource to perform data analysis of streams of social media data with geographic references and/or coordinates that can be mapped to specific locations. This wealth of data allows researchers to ask meaningful geographical, sociological, and political research questions associated with the development of the internet that until now could only be evaluated more limitedly due to scanty data. This chapter aims to familiarize internet researchers with spatial analysis and to provide a soft learning curve to scholars unfamiliar with the R environment for statistical computing. To this end, an overview of methods, tools, and the literature dedicated to spatial analysis of internet-generated data is presented. The chapter also reviews seminal literature in the area, describes the core components of the R environment for spatial analysis, and provides an up-to-date overview of the possibilities spatial analysis scholarship offers to internet researchers.

Keywords

Spatial analysis · Internet studies · Geoweb · Big data · GIS

Introduction

Internet studies have long explored the polarity between online and offline human communication. The affordances of internet-enabled technologies and digital media have underlined ongoing sociological questions and galvanized internet scholars to explore larger political, cultural, economic, and ethical research questions. Such research represents a considerable departure from internet studies of the 1990s, which is characterized by dichotomous terms of online, virtual communication versus embodied, offline worlds (Baym 1999); a fascination with the geography of internet infrastructure (Dodge and Kitchin 2001); and concern with information technology's impact on local and nationwide lifestyles (Curry 2002). In the past few years, this research program has swiftly evolved from ontologically distinct constructs of online and offline spaces (Graham et al. 2013) to methodological and ethical challenges raised by Big Data (Tufekci 2014); the dynamics of online social networks (González-Bailón et al. 2011); and more granular investigations on the mutual elapsed effects of digital, internet-enabled activity on larger communities and social networks (Bastos et al. 2015).

This later development in internet scholarship was concurrent with advances in geographic information systems (GIS) that impacted multiple disciplines of scientific inquiry. Humanities scholarship resorting to this wealth of data developed rapidly, particularly in disciplines with a strong foothold on spatial inquiries resulting from questions related to geographic boundaries, nation states, surveillance, private property, and the perception of space. Scholars referred to the geographic data advances in the humanities as a “spatial turn,” as it closely linked

studies in history, literature, cartography, and geography with vast repositories of data associated with specific cultures, regions, and locations. While methodologically the spatial turn represented an effort to employ new tools against established questions in the humanities, it also required scholars to revisit theoretical frameworks offering new directions of research. In order to connect the imprint of such questions with the possibilities of spatial research, sociologists returned to Georg Simmel; historians to Lewis Mumford; and literary historians to Walter Benjamin (Bodenhamer et al. 2010; Massey 2005; Warf and Arias 2008).

The social sciences experienced a similar process of spatial reorganization driven by digitalization of existing sources of societal information, the emergence of geospatial web services (i.e., “geoweb”), and user-generated content, particularly social media platforms, which together produced a swelling body of content with specific spatial references. This adds to an established, curated, and supervised body of geographic information, including conventional and mobile weather stations, satellite and aerial imagery, weather radar, stream observations and gauge stations, citizen observations, ground and aerial LIDAR, water-quality sampling, gas measures, soil cores, and distributed sensors that measure selected domains such as air temperature and moisture (Kitchin 2014). These corpora of geographic-tagged content provide an opportunity for internet researchers to explore the longitudinal and cross-sectional relationship between online and offline contexts, perhaps with the help of spatial analysis (Graham et al. 2013). In the remainder of this chapter, this set of methods and techniques is referred to as spatial rather than geographic. This decision was grounded on the principle that such methods can be applied to data arrayed in any space, not only geographic space.

Two recent developments have contributed considerably to bridging GIS and internet research. Firstly, the recent availability of social network data has provided avenues for quantitative research at unprecedented scales; secondly, the wide availability and increasing affordability of powerful software applications for spatial analysis have contributed to bringing these two areas of scholarship into closer contact with one another. Research focusing on spatial analysis and geographic information systems (GIS) has long relied on GPS and internet-enabled digital devices (Leetaru et al. 2013), but the popularity of spatial analysis and GIS methods in internet research to date has been very limited, likely a result of spatial analysis’s long-standing, however inaccurate, association with logical empiricism (Plummer and Sheppard 2006). As internet research sits comfortably between qualitative and quantitative analysis, scholarship dedicated to internet research has resisted embracing spatial analysis methods, particularly the computational implementation of spatial statistics.

Yet the field of spatial analysis contends with challenges that internet research scholars are increasingly negotiating, including the multidimensionality of the object of study, the interdisciplinary nature of its methodological approaches, and the strong dependence on computers for data collection and analysis. To address this

shortcoming of internet research, this chapter reviews the literature bridging internet studies and spatial analysis and offers an overview of the tools and methods available to researchers interested in pursuing this research program. Spatial analysis comprises a wealth of methods and techniques aiming at accurately describing geographical phenomena. As such, the objective of this chapter is to offer a brief introduction to the area, and to describe methods and tools that are relatively accessible, and can be adapted for internet studies research. As spatial analysis refers to a body of methods, the results of which are necessarily dependent on the location of the objects under analysis, these methods are particularly useful for investigations using point processes with a probability distribution in a finite set of spatial locations (Barthélémy et al. 2012).

Academic scholarship that meets these stringent requirements needs also to define a window of observation – usually a country or a region – necessary for the detection and inference of spatial clusters (Kulldorff et al. 1998). In one case study further detailed in this chapter, the Cartesian coordinates of tweets and street protestors attending demonstrations were used to create a point pattern dataset (Illian et al. 2008). In view of the growing availability of geospatial data from social media, this method could be applied to any set of geographic information. In fact, internet scholarship is set to benefit from engaging with various methods for the analysis of political, social, or economic spatial and space-time clusters. Such methods can be applied to spatial and geographic data to reveal patterns and anomalies that are not immediately obvious, as spatial analysis, broadly defined, consists of transforming raw spatial data into useful information. These approaches are based on the assumption that the separation of features or events on the planet's surface provides information about the events under consideration, and that points patterns can be analyzed to identify clustering or dispersion of interacting spatial points.

In summary, spatial analysis includes a set of techniques to determine relationships between properties of places; methods to examine distance effects on the creation of clusters, hotspots, and anomalies; and applications of convolution in GIS, including density estimation and the characterization of neighborhoods. As these methods and techniques are beyond the scope of this chapter, only analyses based on location and distance are covered herewith. Spatial modeling, a term describing a number of advanced techniques that analyze and simulate dynamic processes, is also beyond the scope of this chapter, but an extensive review of the topic can be found in Fischer and Getis (2009) and Gelfand et al. (2010). In the remainder of this chapter, this complex area of research is mapped, a reflection on key empirical findings from previous research is offered and developments that have bridged spatial analysis and internet research are discussed. The second half of this chapter is dedicated to a discussion of data sources useful for spatial analysis. In the last two sections, the state of this internet research subfield and implications for future research are discussed.

Review of the Literature

Scholarship on geographic information about web and social media data has boomed in the past 5 years. Backstrom et al. (2008) investigated the association of web search keywords and the geographic location of IP addresses and modeled the spatial variation manifested in search queries. The availability of geographic information of web search data was also explored by Gan et al. (2008) and Ginsberg et al. (2008), who successfully traced the spread of flu in the USA by correlating the number of visits to a local doctor with flu-based search terms on Google. While earlier literature has focused on modeling information about web search data, recent research has focused on user-generated geographic information by mining social media information streams.

This latter line of research was made possible by the growing availability of geographic information generated by social media users and GPS-enabled devices. Cheng et al. (2010) used a probabilistic model based on hundreds of tweets to estimate the likelihood that users are living in a particular city location within a 100-mile radius, while Sakaki et al. (2010) investigated the real-time interaction between onsite events and Twitter streams to monitor tweets and detect events in a predefined set of geographic locations. Noulas et al. (2011) studied urban mobility patterns in several metropolitan areas by analyzing a large set of Foursquare users, and Gao et al. (2012) offered a socio-historical model to explore users' behavior on location-based social networks.

Researchers have also explored the contrast between geography and the topology of social networks. Volkovich et al. (2012) investigated the interaction between users and spatial distance and found that ties in highly connected social groups tend to span shorter distances than connections bridging separated portions of the network. Cranshaw et al. (2012) measured the social dynamics of a city based on check-ins on Foursquare, a location-based search and recommendation service, and compared the results with the boundaries of traditional municipal organizational units such as neighborhoods. The clustered check-in areas generated by social media users differed considerably from geographically defined neighbors.

The emergence of Twitter hashtags associated with specific urban locations and the role they play in public conversations has also been extensively investigated. Boyd et al. (2010) described the topic function of hashtags, Huang et al. (2010) explored the conversational nature of Twitter tags, and Bruns and Liang (2012) discussed how Twitter was used in Australia to exchange information related to natural disasters. Although most literature on hashtags focuses on the context rather than the geographic information provided, previous investigations have explored the overlap between hashtag and geographic location information. Sloan et al. (2013) used a sample of one million tweets with geographic information retrieved from user profiles, geotagged tweets, and message content to estimate demographic information from the messages.

There is also a growing body of literature focused on social and geographic information retrieved from user profiles. Hecht et al. (2011) found that 34% of users did not provide real location information, and that when such information was available, it rarely went beyond city level. Quercia et al. (2012) explored a large sample of Twitter profiles to test whether real-life geography and topic associations would hold true on Twitter. Leetaru et al. (2013) retrieved geographic data from tweets based on geocode, profile, and messages and found that geographic proximity played a minimal role both in whom users communicate with and what they communicate about, providing preliminary evidence that geographic location is not paramount to information exchange in social media.

On the other hand, a large body of work stresses the importance of geography to the Twitter network. Kulshrestha et al. (2012) investigated the participation of Twitter users and network connectivity and reported that geography had a substantial impact on interaction between users. Similarly, Takhteyev et al. (2012) examined the influence of geographic distance and national boundaries in the formation of social connections on Twitter and reported that a substantial share of ties was in the same region. Yardi and Boyd (2010) investigated tweets related to two local events and found that the geographic location of tweets and users is important in creating context, providing real-time information, and offering eyewitness accounts of the events.

The literature on social movements has devoted considerable attention to the relationship between social media usage and physical protests (Bennett et al. 2014; Castells 2012), the ease of digital self-publication through online platforms and contentious communication (Castells 1997, 2009; Diani 2000; Tarrow 2005), and the increase in speed and scale of political networks (Bennett et al. 2008; Bennett and Segerberg 2013). The literature has also explored how social media facilitates organization and horizontal logistical coordination (Theocharis 2013) while providing a positive setting for the construction of elective social affinities (Papacharissi and Oliveira 2012).

By any measure, the current body of scholarship has explored multiple sources of geographic information to address meaningful sociological, historical, economical, and political research questions that until now could be evaluated only to a limited extent because of scanty data. In fact, a considerable portion of the abovementioned body of scholarship is dedicated to and reports on sociologically relevant questions that until recently were beyond our ability to articulate, let alone provide a systematic approach to these questions (Cheshire and Batty 2012).

Spatial Analysis and Internet Studies

Early internet scholarship often heralded digital technology as a means to transcend the constraints of physical environments. While geography, politics, and languages define terrestrial and tangible societal points of human contact, digital media affordances provide a forum for community-building and human contact that reaches

beyond the constraints of geography. The late development of social media reversed the research agenda of internet studies, as social networks began to reconnect online communities to the physical geographies of cities, and to embed location-aware, geographically referenced data in social media content. This trend extends beyond the boundaries of social media, with metadata from Global Positioning System (GPS) being commonly aggregated with remote and mobile sensors and radiofrequency identification technologies like RFID, NFC, and Bluetooth. As a result, georeferenced data embedded to users' information streams offer internet researchers opportunities to explore the interplay between textual and spatial markers of the social web.

Although these changes are relatively new and have unfolded rather quickly, a great deal of attention across the social sciences has been paid to the potential impact of data-driven methods boosted by digital traces. Miller and Goodchild (2014) argued that the context for geographic research has shifted from a data-scarce to a data-rich environment. As a result, data-driven approaches to geography have emerged to respond to the wealth of georeferenced data flowing from sensors and software that digitize and store a broad spectrum of social, economic, political, and environmental patterns and processes (Crampton et al. 2013; Kitchin 2013). The ease of collecting, storing, and processing digital data has led scholars to inquire about a fourth paradigm of science in which researchers interrogate the world through large-scale, complex instruments and systems that relay observations to large databases subsequently processed and stored as binary data points (Hey 2012).

The rapid development of wireless and social media technologies offers opportunities to internet researchers interested in examining issues of space, practice, and mobility. This is a particularly interesting area of investigation because it crosses the boundaries of many fields. Although the spatial context constitutes a major theme in geographic thought (Miller and Goodchild 2014), there are dimensions to the spatiality of geographic locations that extend beyond physical geography and need to be taken into account. While space refers to geometrical arrangements that structure, constrain, or enable certain forms of movement and interaction, place refers to the mechanisms through which social meanings are attached to locations and settings. Therefore, while space refers to a dimension of spatiality that is mostly geometric, mathematical, or physical, place refers to an aspect of the spatial context that is necessarily social and cultural (Harrison and Dourish 2006). Given the wide range of disciplines that form internet studies, the area is uniquely positioned to explore this tension between place and space, i.e., the relationship between the materiality of the physical space and the social dynamics embedded in it.

The appeal of spatial analysis to internet studies also pushes the boundaries of geography as an academic discipline historically identified with topographic, chorographic, and geographic inquiries (Curry 2002). Spatial analysis also reaches beyond the constraints of "urban computing," which is mostly dedicated to analyzing the role of technology in urban experiences (Paulos and Jenkins 2005). The multiple dimensions of social media data that are accessible to internet researchers are heterogeneous and require analytic skills beyond the spatiality of the data. Core

questions of internet researchers lie not at the spatial dispersion of the data, but at intersections, superposition, and overlapping of different spatial systems and various information streams associated with socially constructed phenomena. Harrison and Dourish (2006) described this domain of academic inquiry and made the case that the relationship between spatiality and practice, and how multiple spatialities might intersect, are core issues that warrant exploration.

Spatial analysis is a particularly relevant topic for internet studies in view of the epistemological assumptions derived from “virtual” settings, which increasingly overlap with physical settings due to wireless and mobile technologies. The complex feedback loop between online and onsite practices are typically salient in the context of social media that urges users to reencounter everyday space as they circulate in and out of online communities. This feedback loop considerably extends the community-building potential associated with digital media as users swiftly move across various geographic communities. Beyond the new channels of sociality enabled by the emergence of social media technologies, and the extension of socially meaningful physical places to internet-enabled forums, the recent availability of data and methods to explore location-rich social phenomena allows researchers to investigate what roles different spatialities might play, whether they occur together, and how temporal variations of spatial points relate to the developments of social events.

The wealth of GIS tools that are currently available can assist researchers who have a reasonable understanding of spatial methods and strong domain-specific knowledge. While traditionally defined humanities and social sciences research questions have much to gain from these developments, recent studies have been carried out mostly by researchers with a background in the hard sciences, particularly computer scientists and physicists who rapidly turned to the recently available data and established methods to pursue social science and humanities research. Notwithstanding the remarkable advancements that have ensued from this research agenda, this scholarship rarely establishes a connection with centuries of social science research and falls short at formulating research questions that speak to core problems resulting from the complex interaction of cultures, politics, policies, and governments (Kitchin 2014).

At the risk of unwarranted optimism, the humanities and the social sciences are positioned to ultimately master such methods that can lead to scholarship beyond exploratory and descriptive research that drives most big data research. According to Kitchin (2014), this should lead cognate research beyond predominant questions of pattern recognition and correlation testing towards providing a contextual explanation to patterns and correlations. While the social sciences have been generally slow to react to such changes, internet scholarship can leverage its historical association with internet data to spearhead this type of scholarship. The risk in failing to do so, again according to Kitchin (2013, p. 265), is to never recover ground with respect to these fields, especially after they have benefitted from the significant allocation of new research funds and the support of policymakers.

Tools for Spatial Analysis

The continuing technological advances associated with spatial statistics and the growing availability of geographically rich data have unfolded so rapidly that merely grappling with such changes constitutes a challenge for researchers. The computational resources available at the turn of the century required weeks of data preparation before analysis and mapping of the distributions of phenomena could begin. Since then, technological development has provided formal tools to examine much finer spatial scales, particularly those dealing with local movement such as pedestrian modeling. It is fortunate that computational resources have also become more widely available and universally cheaper, as the volume of data currently released each day exceeds anything that could be collected in the typical academic lifetime of a generation ago (Cheshire and Batty 2012). Perhaps unsurprisingly, private companies currently collect more personal information than central governments, with 15 out of 17 business sectors in the USA averaging a higher volume of data per company than the Library of Congress (Manyika et al. 2011).

The R environment for statistical computing (R Development Core Team 2014) is positioned to offer a robust and unified platform from where internet and spatial analysis researchers alike can perform data mining with comparatively modest systems and an enormous selection of community-contributed packages. As an ecosystem, R offers a multitude of packages for spatial analysis and statistical computing. Researchers can seize upon this computational resource to perform data analysis of streams of social media data that include geographic references and coordinates that can be mapped to specific locations. R has becoming increasingly recognized as the de facto standard for data visualization and spatial analysis, with growing interest in the platform, perhaps hindered only by its relatively steep learning curve, complex help files, and idiosyncratic programming language.

Compared to R, most geographic information systems (GIS) software will provide a point-and-click interface that allows for easier visual interaction, data management, geometric operations, and standard workflows, with single map production and speedy execution. R, on the other hand, is more data- and model-focused, provides a greater range of analyses, rates attributes as being more important, manages many (simpler) maps, and emphasizes reproducibility (by scripting) with speedy development. Base R installation can read, visualize, and analyze spatial data, geographic, or otherwise. Spatial observations can be identified to locations, and additional information for each observation can be added and retrieved by the user. The R ecosystem also contains various contributed packages that address two important technical issues: moving spatial data into and out of R and analyzing spatial data in R. Some interoperability is possible between Base R and commercial GIS software applications, with R packages *maptools* and *shapefiles* allowing for reading and writing ArcGIS and ArcView shapefiles (Bivand and Lewin-Koh 2015; Stabler 2013).

The following section details major R packages and functions currently available for the analysis of spatial data. R packages apply spatial analysis on locations or spatial relationships as an explanatory or predictive variable. Broadly speaking, spatial analysis with R relies on packages *sp* for vector data (Bivand et al. 2008; Pebesma and Bivand 2005), *raster* for raster data (Hijmans 2015), *rgdal* for input, output, and projections (Bivand et al. 2015), *rgeos* for geometry operations (Bivand and Rundel 2014), and *spdep* for spatial dependence (Bivand et al. 2013). Although there are currently no shared classes for spatial objects in R, packages often depend on classes created by other packages. The *spatial.tools* package contains spatial functions meant to enhance the core functionality of the *raster* package (Greenberg 2014; Hijmans 2015), including a parallel processing engine for use with rasters, while *spacetime* extends the shared classes defined in *sp* for spatio-temporal data (Pebesma 2012; Pebesma and Bivand 2005).

Modern country boundaries are provided by the *rworldmap* package (South 2011), along with functions to join and map tabular data referenced by country names or codes, with higher resolution country borders made available by the *rworldxtra* package (South 2012). Historical country boundaries (1946–2012) are provided by the *cshapes* package (Weidmann and Gleditsch 2013), along with functions for calculating distance matrices. R ecosystem includes a number of packages for chloropleth, bubble maps, and user supplied maps. The *leafletR* package (Graul 2015) provides web-mapping functionality that combines vector data files and online map tiles from different sources, while the *OpenStreetMap* and *osmar* packages provide access to open street map raster images and data from different sources (Eugster and Schlesinger 2013; Fellows and Stotz 2013).

The *spatstat* and *spatial* packages are dedicated to space-time and point pattern analysis (Baddeley and Turner 2005; Venables and Ripley 2002), with *spatstat* making extensions to marked processes and spatial covariates, providing ample support for model-fitting and simulation, and allowing researchers to define areas of interest. It is currently the only package available at CRAN (Development Core Team 2014) that allows users to fit inhomogeneous point process models with interpoint interactions. Another package used for spatial data manipulation and analysis is *sp* (Pebesma and Bivand 2005), which benefits from a large user base and supports vector data as points, lines, and polygons. Spatial analysis is performed over a “*sp* object,” and although it is possible to create a “*SpatialPoints* object” from scratch, users often resort to a spreadsheet-like file (data frame) or import GIS files to generate the abovementioned *sp* object. Finally, the package *rgdal* provides support for importing and exporting both vector and raster GIS data. For illustration purposes, the following snippet generates and plots a few *sp* objects (Bivand et al. 2008).

```
# Load sp package
library(sp)

# generate data
temp <- matrix(data=runif(n=300), ncol=2)

# check data
head(temp)

##           [,1]      [,2]
## [1,] 0.54445781 0.8986697
## [2,] 0.07423457 0.8157765
## [3,] 0.50057907 0.3827013
## [4,] 0.15822504 0.8114411
## [5,] 0.66051546 0.3536490
## [6,] 0.11811054 0.7705583

# transform to sp object
temp.sp <- SpatialPoints(temp)
summary(temp.sp)

## Object of class SpatialPoints
## Coordinates:
##               min         max
## coords.x1 0.016006670 0.9994261
## coords.x2 0.001857039 0.9989754
## Is projected: NA
## proj4string : [NA]
## Number of points: 150

# transform spreadsheet-like data to sp object
library(maps)
data(us.cities)

# check dataset built in to the maps package
head(us.cities)

##           name country.etc   pop    lat    long capital
## 1 Abilene TX          TX 113888 32.45 -99.74     0
## 2 Akron OH          OH 206634 41.08 -81.52     0
## 3 Alameda CA          CA  70069 37.77 -122.26     0
## 4 Albany GA          GA  75510 31.58 -84.18     0
## 5 Albany NY          NY  93576 42.67 -73.80     2
## 6 Albany OR          OR  45535 44.62 -123.09     0

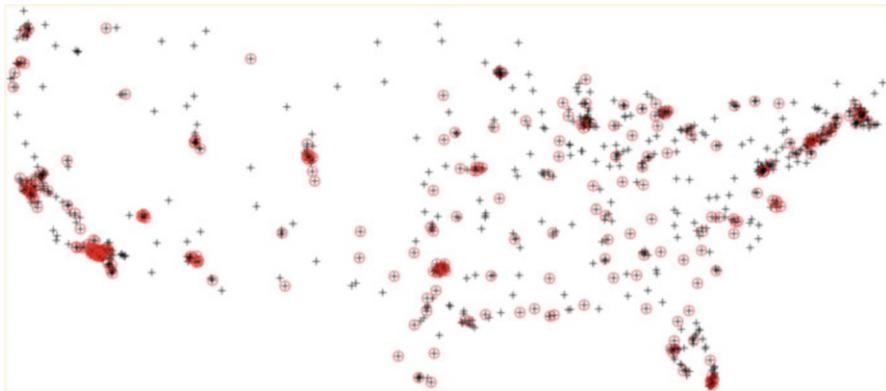
# remove alaska and hawaii
us.cities <- us.cities[!us.cities$country.etc=="AK" & !us.cities$country.etc=="HI",]

# transform data frame to a SpatialPointsDataFrame by identifying
# columns with x and y coordinates
coordinates(us.cities) <- ~long + lat
class(us.cities)

## [1] "SpatialPointsDataFrame"
## attr(,"package")
## [1] "sp"

# plot cities
plot(us.cities)

# highlight big cities
plot(us.cities[us.cities@data$pop>100000], pch=1, col="red", cex =3, add=TRUE)
```



The packages reviewed in this section allow researchers to examine the effects of scale and to provide support for hypothesis testing based on expert knowledge. Together with the basic functionalities of R, they integrate spatial studies with data analysis, and allow for converting data into available infrastructure provided by other existing R packages (Bivand 2015). This introduction to methods and tools for spatial analysis in R provides a glimpse of the possibilities for those interested in applying spatial analysis to their data within the R ecosystem. A comprehensive and up-to-date overview of spatial analysis in R is available at the CRAN Task View: Analysis of Spatial Data (Bivand 2015).

Methods in Spatial Statistics

A fitting example of the potential of spatial analysis for internet studies is the research on the spatial dispersion of protestors attending demonstrations compared to users tweeting the 2013 protests in Brazil. In this piece Bastos et al. (2014) resorted to the *spatstat* package (Baddeley and Turner 2005) for space-time point pattern analysis. As the package offers support for point pattern data consisting of many different types, the researchers aggregated four different sources of geographic information (namely, the locations of tweets, user profiles, hashtags, and protestors) associated with the demonstrations into one marked planar point pattern contained by a window area equivalent to the territory of Brazil. Events within this window area were labeled according to the data source type, and the four categories could be analyzed together as multitype point patterns that represented the different information streams investigated in the study.

The location of social media messages and protest activity on the ground were projected as x-y coordinates of political unrest in a shape file that simulated a Poisson process conditional to the events and the deviation from CSR. This part of the analysis was required to indicate the number of protest events in each region and to project the spread of political upheaval for neighboring space points. To this end, the researchers removed all shared borders in the polygons (Brazilian map), hence

avoiding problems with self-intersection and geometrical artifacts in the map. The analysis also computed the distance between point patterns and calculated the optimal point matching between multiple streams of protest activity. Although this approach can be extended to various investigations with internet-derived data, it is important to note that the specialized primal-dual algorithm implementation by Illian et al. (2008) can currently handle only patterns with a few hundred points.

These limitations are likely to be overcome at some point. Meanwhile, researchers with datasets larger than what the primal-dual algorithm can handle could follow the procedures detailed in the abovementioned study, where the authors resampled the planar points to one thousand points for each information stream associated with the 2013 protests in Brazil (geocoded tweets, hashtagged tweets, Twitter profiles, and protestors demonstrating onsite). This procedure allowed researchers to analyze the spatial locations of protest activity and to provide a probability distribution of objects in a finite set of spatial locations. Such approach stems from the notion that a set of political protest locations can be defined as points in space, thus translating protest data into a spatial statistics problem (Barthélémy et al. 2012) defined within the window of observation (in that case, the Brazilian territory with 26 states and 1 federal district). Martin Kulldorff and Nagarwalla (1995) model provides the necessary support for datasets that include exact geographic coordinates for each observation (or individual). The model also provides a method of detection and inference of spatial clusters and alternative hypotheses (Kulldorff et al. 1998).

This research design could be extended to a range of data retrieved from social media platforms displaying some relationship with events developing on the ground. In the case study reviewed herein, the authors relied on the Cartesian coordinates of tweets and street protests to create point pattern data and performed pair correlation function of points using kernel methods to determine the dependence between points in the spatial point process. By exploring the intensity function $\lambda(s)$ to define where events were likely to happen in the area A as the integral of the intensity function over A , the researchers were able to detect spatial and space-time clusters of political unrest and to test for random distribution over space (Kulldorff 1997, 2001). However, such methods for spatial analysis are not without limitations, particularly in relation to the lack of a proper way to address cross-event correlation and cross-location correlation with space-time statistics. Moreover, complex visualization for pattern detection and hypothesis formulation is still relatively forthcoming.

Conclusion

This chapter provided an overview of the opportunities for internet research scholars interested in integrating spatial analysis into their research. Fundamental issues surrounding internet research and spatial statistics were discussed, including the multidimensionality of the object of study, the interdisciplinary nature of its methods, and the strong dependence on computers for data collection and analysis. Another point of convergence is the abundance of internet-powered devices that

generate a wealth of location-rich information often referred to as “geoweb,” which, coupled with emerging platforms for spatial analysis, has opened avenues for quantitative research at unprecedented scales. To this end, this chapter detailed recent developments of the R environment for statistical computing, reviewed the essential packages for spatial analysis, presented a review of seminal studies in the area, and detailed a set of methods that could be repurposed for internet studies interested in exploring spatial data.

Beyond the methodological limitations described in this chapter, there are also considerable limitations associated with the availability of data that need to be taken into account. In the study discussed in the previous sections, Bastos et al. (2014) identified the location of only half of the users who tweeted messages related to the 2013 protests in Brazil. Additionally, the location of users was retrieved using sources that vary considerably in terms of reliability and precision, as the geographic information provided by geocoded tweets, user profiles, and Twitter hashtags offer different levels of accuracy and reliability. Lastly, the availability of data derived from social media needs to be considered within the framework of social sciences research, and particularly in the context of the challenges facing data-driven research that deals with populations instead of samples; messy instead of clean data; and frequent correlations that only rarely allow for testing causality (Miller and Goodchild 2014).

This changing research context sits side by side with sociology research based on surveys, samples, and randomization, which is not without its limitations. Although random sampling tends to work well, it is fragile to the extent that it only works as long as the sampling is representative. Sample data also has a lack of extensibility for secondary uses. Even when the sampling is appropriate, it is often of no use beyond the rationale used for sampling the data, i.e., a sampling rate of one in six is adequate for some purposes but is problematic when the analysis focuses on comparatively uncommon subcategories. According to Miller and Goodchild (2014), random sampling also requires a process for enumerating and selecting from the population (a sampling frame) that is potentially problematic if enumeration is incomplete. Because randomness is so critical, one must carefully plan for sampling, and it may be difficult to repurpose the data beyond the scope for which it was collected (Mayer-Schönberger and Cukier 2013).

In contrast, many of the social media and “geoweb” data sources offer complete populations, not just samples. With the increasing ease of collecting, storing, and processing digital data, researchers possess the opportunity to work with complete rather than small, representative populations, thus avoiding constraints that have been identified by previous researchers. Working with populations rather than samples is also not without its problems, however. For one, populations are often self-selected rather than sampled, i.e., Facebook users comprise individuals who willingly signed up for the service; mobile data is restricted to individuals who carry smartphones; geocoded tweets are restricted not only to users who willingly signed up for Twitter but also to Twitter users who willfully agreed to have their messages automatically geotagged. Considering it is currently impossible to know the demographic characteristics of any of these groups, it is also impossible to generalize from

the results derived from this data to any larger populations from which they might have been drawn (Miller and Goodchild 2014, pp. 3–4).

Despite these considerable caveats, and in view of the numerous opportunities for academic scholarship reviewed hitherto, internet studies are uniquely positioned to employ research designs that leverage the geoweb to study interactions between offline space and online activity. Case studies could be extended beyond what was discussed in this chapter or adapted from other areas of academic inquiry to explore entirely different research questions. The conditions for situating spatial analysis within internet studies are relatively straightforward. Researchers would need to organize their data as point processes, thus allowing for testing a probability distribution in a finite set of spatial locations. Researchers would also need to define a window of observation (usually a country or a region) in order to detect and/or infer spatial clusters, though going forward the spatial analysis should be helpful for addressing the research questions posed by the study. Considering the growing availability of geospatial data derived from the “geoweb,” along with a broad range of user-generated and content-rich geographic data, internet scholarship is well positioned to develop a full range of methods for the analysis of political, social, and economic spatial and space-time clusters.

References

- Backstrom L, Kleinberg J, Kumar R, Novak J (2008) Spatial variation in search engine queries. Paper presented at the 17th international conference on World Wide Web
- Baddeley A, Turner R (2005) Spatstat: an R package for analyzing spatial point patterns. Retrieved from www.jstatsoft.org
- Barthélémy S, Trukenbrod H, Engbert R, Wichmann F (2012) Modelling fixation locations using spatial point processes. arXiv preprint arXiv:1207.2370
- Bastos MT, Mercea D, Charpentier A (2015) Tents, tweets, and events: the interplay between ongoing protests and social media. *J Commun* 65(2):320–350. <https://doi.org/10.1111/jcom.12145>
- Bastos MT, Recuero R, Zago G (2014) Taking tweets to the streets: a spatial analysis of the vinegar protests in Brazil. *First Monday* 19(3). <https://doi.org/10.5210/fm.v19i3.5227>
- Baym NK (1999) Tune in, log on: soaps, fandom, and online community, vol 3. Sage, London
- Bennett WL, Breunig C, Givens T (2008) Communication and political mobilization: digital media and the Organization of Anti-Iraq war Demonstrations in the U.S. *Polit Commun* 25(3):269–289. <https://doi.org/10.1080/10584600802197434>
- Bennett WL, Segerberg A (2013) The logic of connective action: digital media and the personalization of contentious politics. Cambridge University Press, Cambridge
- Bennett WL, Segerberg A, Walker S (2014) Organization in the crowd: peer production in large-scale networked protests. *Inform Comm Soc* 17(2):232–260. <https://doi.org/10.1080/1369118x.2013.870379>
- Bivand R (2015) Analysis of spatial data. CRAN task view, CRAN
- Bivand R, Hauke J, Kossowski T (2013) Computing the Jacobian in Gaussian spatial autoregressive models: an illustrated comparison of available methods. *Geogr Anal* 45(2):150–179
- Bivand R, Keitt T, Rowlingson B (2015) rgdal: bindings for the geospatial data abstraction (version 0.9–2), CRAN. Retrieved from <http://CRAN.R-project.org/package=rgdal>
- Bivand R, Lewin-Koh NJ (2015) maptools: tools for reading and handling spatial objects (version 0.8–34), CRAN. Retrieved from <http://CRAN.R-project.org/package=maptools>

- Bivand R, Rundel C (2014) rgeos: Interface to geometry engine – open source (GEOS) (version 0.3–8), CRAN. Retrieved from <http://CRAN.R-project.org/package=rgeos>
- Bivand RS, Pebesma EJ, Gómez-Rubio V, Pebesma EJ (2008) Applied spatial data analysis with R, vol 747248717. Springer, New York
- Bodenhamer DJ, Corrigan J, Harris TM (2010) The spatial humanities: GIS and the future of humanities scholarship. Indiana University Press, Bloomington
- Boyd D, Golder S, Lotan G (2010) Tweet, tweet, retweet: conversational aspects of retweeting on Twitter, Honolulu, HI
- Brun A, Liang YE (2012) Tools and methods for capturing Twitter data during natural disasters. First Monday 17(4)
- Castells M (1997) The information age: economy, society and culture vol II – the power of identity. Blackwell, Cambridge
- Castells M (2009) Communication power. Oxford University Press, Oxford
- Castells M (2012) Networks of outrage and hope. Polity Press, Cambridge
- Cheng Z, Caverlee J, Lee K (2010) You are where you tweet: a content-based approach to geo-locating Twitter users. Paper presented at the 19th ACM international conference on Information and knowledge management
- Cheshire J, Batty M (2012) Visualisation tools for understanding big data. Environ Plan B Plan Des 39(3):413–415
- Crampton JW, Graham M, Poorthuis A, Shelton T, Stephens M, Wilson MW et al (2013) Beyond the geotag: situating ‘big data’ and leveraging the potential of the geoweb. Cartogr Geogr Inf Sci 40:130–139
- Cranshaw J, Schwartz R, Hong J, Sadeh N (2012) The livehoods project: utilizing social media to understand the dynamics of a city. Paper presented at the 6th International AAAI Conference on Weblogs and Social Media, Dublin
- Curry MR (2002) Discursive displacement and the seminal ambiguity of space and place. In: Lievrouw L, Livingstone S (eds) The handbook of new media. SAGE, London, pp 502–517
- Diani M (2000) Social movement networks virtual and real. Inform Commun Soc 3(3):386–401
- Dodge M, Kitchin R (2001) Atlas of cyberspace, vol 158. Addison-Wesley, London
- Eugster MJ, Schlesinger T (2013) Osmar: OpenStreetMap and R. R Journal 5(1):53–63
- Fellows I, Stotz JP (2013) OpenStreetMap: Access to open street map raster images (version 0.3.1), CRAN. Retrieved from <http://CRAN.R-project.org/package=OpenStreetMap>
- Fischer MM, Getis A (2009) Handbook of applied spatial analysis: software tools, methods and applications. Springer, New York
- Gan Q, Attenberg J, Markowetz A, Suel T (2008) Analysis of geographic queries in a search engine log. Paper presented at the 1st International Workshop on Location and the Web
- Gao H, Tang J, Liu H (2012) Exploring social-historical ties on location-based social networks. In: Sixth International Conference on Weblogs and Social Media (ICWSM’12) June 4–8. Dublin, Ireland, pp 114–121
- Gelfand AE, Diggle P, Guttorp P, Fuentes M (2010) Handbook of spatial statistics. CRC Press, Boca Raton
- Ginsberg J, Mohebbi MH, Patel RS, Brammer L, Smolinski MS, Brilliant L (2008) Detecting influenza epidemics using search engine query data. Nature 457(7232):1012–1014
- González-Bailón S, Borge-Holthoefer J, Rivero A, Moreno Y (2011) The dynamics of protest recruitment through an online network. Sci Rep 1:197. <https://doi.org/10.1038/srep00197>
- Graham M, Zook M, Boulton A (2013) Augmented reality in urban places: contested content and the duplicity of code. Trans Inst Br Geogr 38(3):464–479. <https://doi.org/10.1111/j.1475-5661.2012.00539.x>
- Graul C (2015) LeafletR: interactive web-maps based on the leaflet javascript library (version 0.3–2), CRAN. Retrieved from <http://cran.r-project.org/package=leafletR>
- Greenberg JA (2014) spatial.tools: R functions for working with spatial data (version 1.4.8), CRAN. Retrieved from <http://CRAN.R-project.org/package=spatial.tools>

- Harrison S, Dourish P (2006) Re-space-ing place: place and space ten years on. Paper presented at the proceedings of the 2006 20th anniversary conference on computer supported cooperative work
- Hecht, B, Hong L, Suh B, Chi EH (2011) Tweets from Justin Bieber's heart: the dynamics of the location field in user profiles. Paper presented at the SIGCHI conference on human factors in computing systems, Vancouver, BC, Canada. [http://CRAN.R-project.org/package=raster](http://delivery.acm.org/10.1145/1980000/1978976/p237-hecht.pdf?ip=169.237.62.143&id=1978976&acc=ACTIVE%20SERVICE&key=CA367851C7E3CE77%2EBD0EBCE24FE9A3C5%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&CFID=823708297&CFTOKEN=13640073&_acm_=1470779372_43ce61c727e9b7db7ac2d3ba622b36e8</p><p>Hey T (2012) The fourth paradigm – data-intensive scientific discovery. In: Kurbanoglu S, Al U, Erdogan P, Tonta Y, Ucak N (eds) E-science and information management, vol 317. Springer, Berlin Heidelberg, pp 1–1</p><p>Hijmans RJ (2015) Raster: geographic data analysis and modeling (version 2.3–40), CRAN. Retrieved from <a href=)
- Huang J, Thornton KM, Efthimiadis EN (2010) Conversational tagging in Twitter. Paper presented at the 21st ACM conference on hypertext and hypermedia, Toronto, Ontario, Canada. [https://doi.org/10.1177/2043820613513388](http://delivery.acm.org/10.1145/1820000/1810647/p173-huang.pdf?ip=169.237.62.143&id=1810647&acc=ACTIVE%20SERVICE&key=CA367851C7E3CE77%2EBD0EBCE24FE9A3C5%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&CFID=823708297&CFTOKEN=13640073&_acm_=1470779376_3a6df9ca61b6a6383b211f5ddc9db942</p><p>Illian J, Penttinen PA, Stoyan H, Stoyan D (2008) Statistical analysis and modelling of spatial point patterns. Wiley, Chichester</p><p>Kitchin R (2013) Big data and human geography: opportunities, challenges and risks. <i>Dialog Human Geogr</i> 3(3):262–267. <a href=)
- Kitchin R (2014) Big data, new epistemologies and paradigm shifts. *Big Data Soc* 1(1). <https://doi.org/10.1177/2053951714528411>
- Kulldorff M (1997) A spatial scan statistic. *Commun Stat Theor Meth* 26(6):1481–1496
- Kulldorff M (2001) Prospective time periodic geographical disease surveillance using a scan statistic. *J R Stat Soc A Stat Soc* 164(1):61–72. <https://doi.org/10.1111/1467-985x.00186>
- Kulldorff M, Athas WF, Feurer EJ, Miller BA, Key CR (1998) Evaluating cluster alarms: a space-time scan statistic and brain cancer in Los Alamos, New Mexico. *Am J Public Health* 88(9):1377–1380
- Kulldorff M, Nagarwalla N (1995) Spatial disease clusters: detection and inference. *Stat Med* 14(8):799–810. <https://doi.org/10.1002/sim.4780140809>
- Kulshrestha J, Kooti F, Nikravesh A, Gummadi KP (2012) Geographic dissection of the Twitter network. Paper presented at the 6th International AAAI conference on weblogs and social media, Dublin
- Leetaru K, Wang S, Cao G, Padmanabhan A, Shook E (2013) Mapping the global Twitter heartbeat: the geography of Twitter. *First Monday*, 18(5)
- Manyika J, Chui M, Brown B, Bughin J, Dobbs R, Roxburgh C et al (2011) Big data: the next frontier for innovation, competition, and productivity. McKinsey Global Institute, Lexington
- Massey D (2005) For space. Sage, London
- Mayer-Schönberger V, Cukier K (2013) Big data: a revolution that will transform how we live, work, and think. New York, Houghton Mifflin Harcourt
- Miller HJ, Goodchild MF (2014) Data-driven geography. *GeoJournal* 80(4):449–461
- Noulas A, Scellato S, Mascolo C, Pontil M (2011). An empirical study of geographic user activity patterns in foursquare. In: Fifth International Conference on Weblogs and Social Media (ICWSM'11) July 17–21. Barcelona (Spain), pp 570–573
- Papacharissi Z, Oliveira M d F (2012) Affective news and networked publics: the rhythms of news storytelling on #Egypt. *J Commun* 62(2):266–282
- Paulos E, Jenkins T (2005) Urban probes: encountering our emerging urban atmospheres. Paper presented at the proceedings of the SIGCHI conference on human factors in computing systems

- Pebesma E (2012) Spacetime: spatio-temporal data in R. *J Stat Softw* 51(7):1–30
- Pebesma EJ, Bivand RS (2005) Classes and methods for spatial data in R. *R News* 5(2):9–13
- Plummer P, Sheppard E (2006) Geography matters: agency, structures and dynamics at the intersection of economics and geography. *J Econ Geogr* 6(5):619–637. <https://doi.org/10.1093/jeg/lbl005>
- Quercia D, Capra L, Crowcroft J (2012) The social world of Twitter: topics, geography, and emotions. In: Sixth International Conference on Weblogs and Social Media (ICWSM'12). Dublin, Ireland, pp 298–305
- R Development Core Team (2014) R: a language and environment for statistical computing (version 3.0.3). CRAN, Vienna Retrieved from <http://www.R-project.org>
- Sakaki T, Okazaki M, Matsuo Y (2010) Earthquake shakes Twitter users: real-time event detection by social sensors. Paper presented at the 19th international conference on World Wide Web
- Sloan L, Morgan J, Housley W, Williams M, Edwards A, Burnap P et al (2013) Knowing the tweeters: deriving sociologically relevant demographics from Twitter. *Sociol Res Online* 18(3):7
- South A (2011) Rworldmap: a new R package for mapping global data. *The R Journal* 3(1):35–43
- South A (2012) rworldxtra: country boundaries at high resolution (version 1.01), CRAN. Retrieved from <http://CRAN.R-project.org/package=rworldxtra>
- Stabler B (2013) shapefiles: read and write ESRI shapefiles (version 0.7), CRAN. Retrieved from <http://CRAN.R-project.org/package=shapefiles>
- Takhteyev Y, Gruzd A, Wellman B (2012) Geography of Twitter networks. *Soc Networks* 34(1):73–81 <https://doi.org/10.1016/j.socnet.2011.05.006>
- Tarrow S (2005) The new transnational activism. Cambridge University Press, Cambridge
- Theocharis Y (2013) The wealth of (occupation) networks? Communication patterns and information distribution in a Twitter protest network. *J Inform Tech Polit* 10(1):35–56
- Tufekci Z (2014) Big questions for social media big data: representativeness, validity and other methodological pitfalls. Paper presented at the 8th international AAAI conference on weblogs and social media (ICWSM14)
- Venables WN, Ripley BD (2002) Modern applied statistics with S. Springer, New York
- Volkovich Y, Scellato S, Laniado D, Mascolo C, Kaltenbrunner A (2012) The length of bridge ties: structural and geographic properties of online social interactions. Paper presented at the 6th International AAAI conference on weblogs and social media, Dublin
- Warf B, Arias S (2008) The spatial turn: interdisciplinary perspectives. Routledge, London
- Weidmann NB, Gleditsch KS (2013) cshapes: CShapes dataset and utilities (version 0.4–2), CRAN. Retrieved from <http://CRAN.R-project.org/package=cshapes>
- Yardi S, Boyd D (2010) Tweeting from the Town Square: measuring geographic local networks. Paper presented at the 4th international AAAI conference on weblogs and social media, Washington, DC



Collaboration Between Social Sciences and Computer Science: Toward a Cross-Disciplinary Methodology for Studying Big Social Data from Online Communities

4

Maude Bonenfant and Marie-Jean Meurs

Contents

Problems for Researchers in the Social Sciences	51
Analyzing Online Communities: A Methodology at the Crossroads of Social Sciences and Computer Science	53
Putting Forward a Hybrid Methodology: Critical Review and Conclusions	58
References	60

Abstract

Online communities are now extremely numerous. Most of them being multifaceted, dynamic, and rapidly evolving, they are of the utmost interest for social science researchers. One of the special characteristics of these communities is the production of numerical *traces* generated by communications between members, inside their communities or through social networks. These traces, captured and stored by software managing their dissemination, represent a massive amount of data. Based on their volume, velocity, variety, and veracity, they must be handled in the context of the big data phenomenon. These novel constraints generate scientific, epistemological, and ethical problems related to the limited understanding researchers have of the algorithms utilized by software tools, their possibilities and limitations, error rates, and biases. As a consequence, social science researchers interested in mining all these data often depend on data analysts who lack any social science background. Collaboration between social sciences and

M. Bonenfant (✉)

Department of Social and Public Communication, University of Quebec in Montreal, Montreal, QC, Canada

e-mail: bonenfant.maude@uqam.ca

M.-J. Meurs

Department of Computer Science, University of Quebec in Montreal, Montreal, QC, Canada
e-mail: meurs.marie-jean@uqam.ca

computer science is hence critical to meet these challenges, and to propose a cross-disciplinary methodology combining the contributions of both fields towards the study of online communities. Using online communities of video game players as an example, this contribution puts the emphasis on identifying the challenges associated with the study of online communities, and proposes a methodology combining computer science and social science approaches. First, we present research questions, categorizations, and classifications related to identity, communication, and social dynamics by linking them to data mining and automated processing techniques. We then study how to integrate social science models into computer tools, and link qualitative methods with big data analysis in order to overcome errors in the interpretation of results related to data decontextualization. Finally, we formalize ethical concerns of social science researchers regarding limitations of software tools. This chapter hence demonstrates the scientific, epistemological, and ethical advantages of combining accepted methods from computer science and social sciences in order to propose a cross-disciplinary methodology for research on online communities.

Keywords

Big social data · Cross-disciplinary methodology · Online communities · Video games

At once multifaceted, dynamic, and rapidly evolving, online communities are of the utmost interest to social science researchers. One of the specific traits of online communities is the production of digital traces through online interactions and communication between members both within their communities and in broader social networks. A software can capture, encode, store, and circulate these traces, which generates massive amounts of data. Considering the volume, velocity, variety, and veracity of these data, it should be addressed as part of the Big Data phenomenon (Mayer-Schönberger and Cukier 2014). This sheer volume of data enables inductive methods as meaningful approaches and allows machine learning algorithms to make predictions and extract patterns based on collected observations.

While such data provide countless clues to social science researchers studying online communities, they also point to understudied populations and lead into innovative research topics and methodologies. However, scholars in such fields as critical data studies have highlighted several problems with the collection and use of digital data and have sought to “interrogate all forms of potentially depoliticized data science and to track the ways in which data are generated and curated, and how they permeate and exert power on all manner of forms of life” (Illiadis and Russo 2016). This perspective on Big Data, although recent, aligns with the critical theories of the Frankfurt School as well as preceding and more established critiques of technology (Ellul 1954; Heidegger 1954; Simondon 1958; Mumford 1967, 1970; Stiegler 1994, 1996, 2001; Feenberg 1999; Rosa 2013).

A central criticism addressed to Big Data technologies is that data, algorithms, and digital systems more generally are not neutral: absolute objectivity is impossible,

even within the context of automated data analysis (Boyd and Crawford 2012). If they are commonly referred to as natural, factual information (as the Latin etymology of the term “given” conveys), data are actually signs used to represent or express facts: as symbolic representations, they only pass as pure, unmediated facts insofar as they undergo a naturalization process (Pushmann and Burgess 2014). This means that data are never raw because they fundamentally depend on the infrastructures that produce and process them (Gitelman 2013). Like in any kind of human system, data production and circulation actualize relationships of power and inscribe biases, patterns of discrimination, as well as ideological parameters (Bollier 2010; Dalton and Thatcher 2014). Notwithstanding mathematics and computer science considerable truth-value, the data that their techniques provide are not external to the social conditions that enable their production as representations of the world (Loudon et al. 2013, cited in Boellstorff 2013). Indeed, Big Data puts forward a set of specifically neoliberal conceptualizations of the world, as large web companies currently are the main producers and owners of social data (Lazer et al. 2014). Furthermore, the practices surrounding the exploitation of Big Data rely on prior selection procedures (Borgman 2015) through which sets of contextual information are put aside, regardless of their (crucial) role in understanding the complexity of social phenomena (Langlois et al. 2015). Scholars in critical data studies remind us that Big Data approaches were designed not to explain real-world phenomena but rather to predict them according to a particular decision-making logic (Kitchin 2014). This undoubtedly challenges our customary understanding of knowledge, but Big Data effects on our increasingly data-driven world remain largely underestimated on the social level, particularly in respect to mass surveillance (Andrejevic 2007; Brown and Marsden 2013; Bennett et al. 2014; Crampton et al. 2013; Berendt et al. 2015).

These criticisms are all pertinent: they encourage rigor in data science and foster a deeper investigation into the methodological, epistemological, ethical, and political stakes of Big Data, issues which are often addressed under the label “data ethics.” In other words, data science can learn from critical data studies. Yet, those criticisms would become all the more relevant if they took common practices in current data science research into account: if this were the case, “(c)ould the result be scholarship that is based on engagement with practices emerging in data science and pragmatic solutions for creating the social and organizational arrangements necessary to support more ethical data science?” (Neff et al. 2017). In formulating this question, Neff and her collaborators call for an “integration of the perspectives of critical data studies into organizational and social processes fundamental to doing data science” (2017). Their outlook, which stems from the consideration of tangible problems at the crossroads of seemingly opposing approaches, aims to promote better research practices that neither flat-out reject nor uncritically accept knowledge produced through Big Data analysis.

While it cannot encompass the totality of our knowledge about the world or represent the “end of theory,” as some would like to believe (Anderson 2008), Big Data offers previously unseen information about online communities and valuable insights into their functioning. The perception and interpretation of phenomena,

both by study participants (through interviews, polls, etc.) and researchers (through observation, auto-ethnography, etc.), actively shape datasets in traditional data collection methods. Using automated data collection also implies mediation, as not only data analysts but also algorithms give shape to data concerning Internet users' actions. Bearing in mind the limitations it implies, the ability of algorithms to offer such otherwise inaccessible information opens new possibilities for research in the social sciences. Indeed, as extraordinary capabilities of computer technologies (be it for data production or treatment) enable automated analysis through inductive procedures, Big Data approaches give access to information about Internet users' behavior that is otherwise impossible to obtain. In this way, rigorously overseeing the use of Big Data technologies makes it possible to better understand certain aspects of online communities and be better equipped to face the "data deluge" (Hey and Trefethen 2003).

However, if new knowledge can be fostered with the help of digital technologies and methodologies, researchers in the field of data science, and computer science more generally, do not always necessarily approach Big Data analysis with societal preoccupations in mind. Meanwhile, in the social sciences, researchers sometimes face insurmountable challenges in using big social datasets produced in the context of studies on online communities. "New data sources bring with them different modes of addressing the public, mobilizing expertise, conceptualizing the social, and research methodology" (Burrows and Savage 2014). Furthermore, this new big social data-driven research method "creates a radical shift [...]. (I)t is a profound change at the levels of epistemology and ethics" (Boyd and Crawford 2012). Automated data analysis incites us to reconceptualize not only the way in which we conduct research now but also what we mean by "knowledge production" itself, hence the urgent need for scholars to reflect critically on the role of such new technologies (Kitchin 2014). Conversely:

(T)he metricization of social life derivable from the analysis of Big Data begins to reveal patterns of social order, movement and engagement with the world – and on such a scale – that it might demand nothing less than a fundamental re-description of what it is that needs to be explained and understood by the social sciences. (Burrows and Savage 2014)

Within this context, the aim of this chapter is to discuss this recent evolution of social science research on online communities, as collaboration with computer science becomes increasingly necessary to adapt to new big social data-driven methods. Dewulf et al. highlight that "(a)lthough much has been written on the necessity and benefits of cross-disciplinary research, relatively little is known about how it actually works" (2007). Therefore, this chapter will begin by identifying the specific problems and difficulties social science researchers must face when working with Big Data and collaborating with computer scientists. Then, we will introduce a methodology at the crossroads of social science and computer science. Within the spirit of previous works promoting such encounters between disciplines (Gitelman 2013; Goulden et al. 2017; Spiller et al. 2015; Neff et al. 2017), we aim to allow each field to benefit from the other, if not to further veritable interdisciplinarity (Morillo et al. 2003; Barry et al. 2008) in big social data analysis. This methodology will

show the benefits of close interdisciplinary partnerships for research on online communities. Finally, we will quickly summarize the limits and challenges of this methodology, as well as its more promising aspects within the framework of achieving greater collaboration between researchers from different fields. This will require a shift from multidisciplinarity (i.e., several disciplines meeting around one topic) to interdisciplinarity (several disciplines sharing concepts, theories, and methods), in which “more coherent and integrated results are obtained” (Morillo et al. 2003). “Cross-disciplinarity” will also be used in this chapter, as an umbrella term comprising multi-, inter-, and transdisciplinarity.

Problems for Researchers in the Social Sciences

First of all, social science researchers who use automated big social data analysis to study online communities face methodological problems. Critical data studies highlight that access to data is a preliminary obstacle, as private corporations own the vast majority of relevant datasets, as well as the right to share their databases or not. Unfortunately, there are very few databases in the public domain (e.g., databases produced by governments or universities), which means that most databases are built within the framework of private interests and the bounds of profit-driven mentality. Another methodological problem is that while “private” datasets might be available, researchers cannot easily control or may not even have a say in determining tracking criteria and data capture parameters. This has an impact on academic research, as it relies on preexisting datasets shaped and informed by business considerations. In other words, the privatization of data prevents scholars from designing the trackers they need in order to answer their research questions. Key questions or hypotheses may have to be left behind as a result, while other less important or compelling questions will take center stage as researchers have to “make do” with the available data.

Besides, while the sheer quantity of gathered data may be advantageous as a source of information and a verifying agent for better research results, it can also be a practical obstacle. Indeed, as manual encoding is impossible, researchers cannot organize the individual elements of their corpus (data package) themselves. This key stage of academic research, which used to be undertaken and fully controlled by researchers, is now fully automated and requires computerized systems. Yet, social scientists generally lack the necessary skills to understand and manipulate digital tools. Indeed, such an ability presupposes a double expertise in the social sciences and computer science. While it may eventually become the norm, this double expertise remains rare. Thus, researchers often depend on programmers to design and set up their research software and on data scientists to analyze the data. In addition to this loss of control over their working methods, researchers often misunderstand what the data means, how analytic and predictive algorithms function, what computerized systems do, and what their intrinsic limits and biases are. Without a good grasp of how systems operate, it might be impossible to adequately implement them.

Such shortfalls point to epistemological problems. This second category of issues is particularly important because it revolves around the production of knowledge about online communities itself. Indeed, without basic computer science skills, relevant information cannot be appropriately targeted and tracked, and research interests cannot be formalized in computer logic, which means that it might be altogether impossible to explore some research questions. In other words, the inability to “translate” social science preoccupations into computer science language can prevent the exploration of key research avenues.

Insufficient expertise and experience with computer science systems and paradigms can also have a negative impact on the assessment, quality, and pertinence of research results. Before drawing knowledge from automated Big Data analysis, one must answer the following question: What is the information extracted from those results worth? Ignorance of the framework within which chosen methods were developed and their constraints makes it impossible to understand information drawn from automated research. If these precautions are not followed, over- and misinterpretation are significant risks: How could one avoid these pitfalls without adequate knowledge of the limits imposed on the interpretation of such results? In other words, insufficient knowledge of computer science results in an inadequate grasp of the effects of its use in the production of results and, thus, of knowledge.

More specifically, it is essential to identify semiotic effects of computerized systems on the production of knowledge in order to assess what software “does” to research results. Indeed, computer language always-already conveys a certain worldview, the logic of which may seem strange from the perspective of social science. In order to correctly interpret the results of automated data analysis, one must understand the scientific postulates that underlie the framework and mode of organization of knowledge in computer science (e.g., the definition, truth-value, and representative character of data). Computer logic relies on mathematics, among others, and on a set of procedures to organize results in a workable way. This procedural approach operates from discrete units of meaning (ultimately, series of ones and zeros) that “cut the world up” to compute it. This approach to knowledge production can cause frictions with other epistemologies in the social sciences, in which a more processual and continuous conceptualization mirrored on human experience prevails.

This points to the third category of problems that social science researchers may encounter during their Big Data-driven work: ethical issues. While human preoccupations are obviously at the heart of social science research, critically assessing the effects of the study of individual and collective practices is an inevitable stage of research projects in the field. Research ethics are intrinsically linked to research topics in the social sciences. For instance, ethical consideration regarding respect for the dignity and privacy of study participants precedes the formulation of research objectives and methods. In the context of computer science, the opposite is more often witnessed, which is not to say that human well-being is not taken into account but rather that human considerations can remain relatively abstract from software design to automated data analysis.

Therefore, the combination of recent progress in artificial intelligence and the unprecedented volume of big social data engenders new ethical issues, especially regarding privacy, responsibility, and the biases of data analysis algorithms (Witten et al. 2016). The ethical concerns and requirements present in any social science research thus meet the issues raised by the introduction of intelligent software in the experimental field. However, such considerations are not necessarily taken into account in software design, especially within the context of data collection using the software developed before undertaking research. Failure to understand such ethical exigencies as the privacy of study participants can make it difficult, if not impossible, for researchers to obtain necessary certifications, which are usually required by universities and funding bodies.

Analyzing Online Communities: A Methodology at the Crossroads of Social Sciences and Computer Science

Most of the problems outlined above can be addressed through intensified collaboration between social science and computer science researchers. Just as critical data studies and data science have much to learn from each other, it seems beneficial for the social sciences and computer science more generally to put their expertise in common toward a shared goal. This call for interdisciplinarity is not new: in 1992, Sommerville et al. published an article titled: “Sociologists can be surprisingly useful in interactive system design.” Skill sharing allows perceiving subjects’ actions from different perspectives, developing new research methods, and using unusual tools to formulate and implement innovating methodologies. Within the context of the interdisciplinary methodology presented in this chapter, the term “methodology” designates both discourse about existing methods and the formulation of a general framework for new methods.

First of all, fostering real collaboration implies creating the means of direct communication and knowledge exchange. If each discipline postulates, objectives, and needs are not clearly expressed, communication issues may negatively impact mutual understanding and thus slow down the research process. For instance, the interdisciplinary research team led by Spiller et al. (2015) had to:

[Begin] the project by conceptualizing the phenomena under investigation [...] in a way that incorporated [their] multiple perspectives while making the most of [their] individual contributions. [...] The choice of theory, or even the angle of exploration, that researchers choose is relevant to their ontological knowledge and experience.

This does not imply that social scientists should become computer science experts. Rather, social scientists should acquire basic knowledge about computer vocabulary and familiarize themselves with the logic and capabilities of automated data processing techniques. In order to partially meet this goal, researchers from all participating fields can draft the research outline together, collectively design research methods and implementation plans, and jointly discuss the constraints of chosen

algorithms and limits of research results. These documents should remain succinct and easy to digest. A glossary of terms or index offering clear and precise definitions of key terms can also complement these materials.

Nevertheless, collaboration in “field” work cannot be avoided, as computer scientists must be able to fully understand their colleagues’ social science-oriented research questions in order to suggest the most appropriate approaches to automation. Developing a collective exploratory methodology requires “agile” collaboration (Beck et al. 2001), in which participating disciplines know to stay attentive to each other’s needs and methods. Daily communication between research group members is key, and sharing a common office or laboratory space is ideal (Mailloux et al. 2017). Such research teams can best take advantage of a mixed-methods approach and incrementally answer research questions of both disciplines.

In addition to training researchers to interdisciplinary work, this collective work of explication also allows highlighting the limitations of approaches used in each discipline, to identify potential biases and, if there are any, to formalize their impacts on research results. On one hand, the context in which sociological inquiry and available data emerge must be clearly laid out, so as to choose the most relevant automated approaches. On the other hand, the framework and scope of computerized methods must be explicit in order to avoid overinterpreting or misinterpreting the results of automated data analysis.

The framework and postulates at play in software systems can only be taken into account in developing research questions and exploiting computer technologies if they are accurately understood. Information retrieval (IR) and supervised learning, two of the most recent and compelling research areas in artificial intelligence, illustrate the stakes of a thorough understanding of the paradigms underlying computerized systems.

Firstly, IR automatically finds the most relevant information to users’ or other automatic requests (Baeza-Yates and Ribeiro-Neto 1999). Numerous systems at the heart of our current digital ecosystem rely on IR, including all search engines (Brin and Page 2012). The best known are privately owned, generic, and available on a global scale (Google, Bing, Yahoo!, Baidu, Yandex, etc.), but many others are more specific according to their target field (Google Scholar, Lexis, PubMed, etc.) or ethical commitments (DuckDuckGo, Qwant, etc.), and almost every website includes a search engine powered by IR-based techniques. The IR paradigm relies on indexing large-scale corpus and their metadata. To fully understand results provided by IR-based approaches, one must keep in mind the potential influence of document and word frequency in the indexed corpus, of the underrepresentation of certain types of documents, or even of the indexing choices (e.g., which metadata will be saved alongside documents). An awareness of the limits and potential biases of IR-based systems allows social scientists to tap into the full potential of IR approaches and refine data analysis. They can hone their search and include the most relevant parameters in their requests or use refined criteria to answer logical questions (e.g., finding online profiles of users who performed action x and not action y).

Secondly, supervised learning automatically encodes and classifies content (Hastie et al. 2009). Within the context of big social data, the volume of data makes manually encoding datasets impossible. Automatic encoding systems, which computer scientists call automatic annotation, are precious for data analysis. Designing such systems relies on the use of a manually encoded dataset to train supervised automatic learning algorithms. Then, models inferred from the training on this dataset can be used to automatically encode data to be processed (Hastie et al. 2009). Rigorous metrics that measure algorithm performance allow accurately gauging the reliability of automated data encoding. It is hence crucial that the training corpus be encoded as well as possible and that the quality of encoding be thoroughly checked. Researchers can use metrics such as the inter-annotator agreement (Artstein 2017) or the kappa coefficient (Carletta 1996) to complete these tasks.

Therefore, in using such methods, successful collaboration between social scientists and computer scientists initially relies on an accurate assessment of efforts to be deployed at the stage of manual encoding in order to develop efficient systems, in respect to both the support of expert human encoders and the automatic predictions and categorizations of new information. Social science researchers must understand that the quantity and veracity of documents available for manual annotation, as well as the (im)balance of datasets strongly, influence results. Indeed, if a manually annotated dataset is too small or contains insufficiently varied documents, learning models will not be able to correctly acquire contextual information. Similarly, if categories in a given dataset (tendencies, subjects, orientations, etc.) are not balanced, that dataset will fail to produce a representative learning model, that is to say that it will result in a biased model. Bearing in mind these limitations and understanding their context, social scientists may contribute to the development of encoding systems alongside computer scientists and control both the data and research results.

Such prior explicitation of software capabilities and limitations also helps formalize sociological categories and research questions in computer language and advance broader scientific research goals. For instance, social scientists can explore specific avenues for research by integrating certain trackers in the production of data that is being collected for indexing. In this way, they can formulate new research questions as they access more numerous sources of information and depend less on existing datasets. Some biases, including the corporate logic influencing most current big social databases, could be mitigated if the social function of data analysis became as important as its profitability. In that sense, computer scientists can collaborate with social scientists before undertaking research, jointly programming trackers organizing data collection in a more efficient and pertinent way.

As highlighted above, encoding itself is another site of interdisciplinary collaboration between the social sciences and computer science. If applying manual encoding to entire datasets is unrealistic, this technique will nevertheless have to be deployed at first in order to integrate the vocabulary and categories of the social sciences within data classification to produce a training dataset. Using supervised learning facilitates social scientists' work by rapidly providing them with large volumes of encoded data. Data availability allows information extraction, text

mining, or IR-based approaches to better answer the research questions of social scientists. In this way, these research fields create powerful resources for knowledge discovery from unstructured big social data, even in real time (Ampofo et al. 2015).

Such collaborative research methods also help consider not only “events” (such as individual entries to be processed) but also “relationships.” Indeed, they operationalize tools and models from the social sciences in the context of computerized research processes and thus point to new forms of knowledge. In “translating” approaches and models from their social science context into software features, the study of relationships (e.g., identity, communicational, social) can be integrated into computerized systems. For instance, social network analysis (Burt and Minor 1983; Borgatti and Halgin 2011; Ackland and Zhu 2015) and, more specifically, sociosemantic network analysis developed by communication studies scholars (Saint-Charles and Mongeau 2005; Mongeau and Saint-Charles 2014) offer the structure for a data processing system to help visualize group dynamics (Mongeau and Saint-Charles 2011). Today, mathematical models underlying these analyses (Scott 2017) can be implemented through new structures such as graphic or non-relational databases. Moreover, these structures have been designed toward high scalability. Thus, they offer promising perspectives for research in the social sciences, both in terms of big social data analysis capabilities and assessing results.

The question of “relationships,” which is at the heart of the social sciences, stresses that any analytic result (be it digital or not) is inscribed within a specific spatiotemporal context. But this issue of context and, more precisely, of contextual data is problematic: producing data by tracking online actions inevitably entails the loss of some contextual information that would have helped understand and analyze the data. Furthermore, if collection decontextualizes social data, data mining then recontextualizes them, which affects both the meaning of the data and the ensuing human interpretation process. Dalton and Thatcher (2014) highlight this problem in stressing that data give information only insofar as they are drawn from certain interpretations: “If we are to understand ‘big data’, and specifically ‘big data’ derived from social media, we must engage directly with the cultural regimes of production and interpretation to restore the thick, rich fullness of description that reveals subjects’ understandings and intent.” Combining qualitative and quantitative social science research methods with new automated data analysis methods is crucial if we are to understand human dynamics in the era of Big Data (Dalton and Thatcher 2014; Elliot and Purdam 2015). Choosing artificial intelligence-based approaches and reflecting on their performance in the context of multimedia collection platforms that focus on users’ behavior (eye tracking, audio, video, etc.) open up new opportunities for interdisciplinary explorations (Jaimes et al. 2006).

In addition to helping remediate what Savage and Burrows (2007) describe as a crisis of empirical research in sociology, combining automated Big Data analysis with data collection techniques seen in the social sciences allows saving a maximum of contextual data, which can then be reactualized when it is time to interpret datasets. For instance, semi-directed interviews following online tracking and data collection allow revealing more about participants’ motivations, characteristics, and

state of mind during decision-making processes and ruling out potential input errors during data collection.

Concretely, one way to proceed is to discuss results of automated data collection with study participants themselves, either showing the data or simulating an interactive session with them on the platform under study (observing them surfing and/or playing while letting them comment and elaborate on their actions, for instance). This allows collecting more qualitative information while tracking quantified data: why user x clicked on a given feature at that specific time, what meaning they give to x reaction, how the user seeks to optimize their flow, etc.

If gathering more information about participants' decisions and actions produces better interpretations of collected data, a semiotic analysis of digital platforms also helps identify the effects of qualitative information on data production by jointly framing the structure of sign systems. In other words, semiotic analysis helps formulate qualitative statements such as the following: *x* feature is *prioritized*; the meaning of *y* command is *ambiguous*; interactive mechanic *z* *encourages* specific behaviors. Cross-checking the results of semiotic analysis offers explanations for automated data analysis results.

Other research methods (e.g., auto-ethnography, observation, polls) can be prioritized to show that blending quantitative and qualitative methods with automated data collection not only contextualizes big social data analysis results but also complements them. It becomes possible not only to *describe* what happened (who, what, when, where) but also to *explain* it (how, why) in a more elaborate way. Moreover, mistaking correlation for causation is a common pitfall in analyzing results from automated data processing. These results can be more accurately and pertinently recontextualized and interpreted when crossed with results from deploying other research methods, especially if this combinatory interpretation process remains both iterative and critical throughout the research process.

Recontextualization through cross-checking remains challenging because it requires matching heterogeneous research questions, information, and types of intervention. Indeed, “(e)mploying this combined approach requires an awareness among researchers of the form of knowledge being produced and their own role in that process” (Dalton and Thatcher 2014). No matter how challenging, this work is at the heart of developing mixed methodologies.

While it must be stressed that data produced through traditional social sciences methods are important, small data should not be neglected either (Kitchin and Lauriault 2015). In addition to contextualizing big social datasets, they help formulate critical questions and problematize databases. Indeed, working with Big Data entails the difficulty of formalizing one's research questions in order to extract meaning out of digital data. Recognizing the importance and role of deductive thinking and the insufficiency of Big Data inductive mode is crucial. Iterative cross-checking of inductive results (correlations between data) and deductive results (questions asked to data) is essential.

One last aspect of this methodology is the formulation of ethical preoccupations in computer language. Indeed, bearing in mind researchers' care for subjects' dignity, discriminatory biases and other mistakes can be avoided (Hastie et al.

2009; Mittelstadt et al. 2016). Making these potential pitfalls explicit is key to furthering respect for subjects' well-being. Privacy must also remain a primary concern, avoiding confusion between the legality and the legitimacy of accessing data: just because data is legally accessible does not make researchers' interests legitimate (Davis and Patterson 2012; Zwitter 2014). This ethical concern, which is exacerbated in the social sciences and firmly expressed in critical data studies, promotes more respectful research practices on individuals and communities. Many scholars have called for changing practices in this way (Boyd and Crawford 2012; de Castell et al. 2012; Chessell 2014; Berendt et al. 2015; Anderson and Jirotka 2015). One way in which such ethical exigencies can be met, especially in respect to privacy, is to anonymize data from the outset, during software development.

Finally, as mentioned at the beginning of this section, communication channels must be opened and geared toward facilitating exchanges between disciplines not only in respect to objectives and methods but also deeper questions of researchers' responsibility, functions and effects of automatic systems on society, the ethical limitations of data collection, and many others. Explaining the limits of research encourages rigorous collaboration that respects each discipline postulates and expertise as well as study participants. The authors of this chapter have tested a rather straightforward way to achieve this goal: giving talks and participating to conferences and seminars in other disciplines promote multidisciplinary discussions between researchers but also in dialogue with students and highlight issues that exceed the scope of one particular discipline.

Putting Forward a Hybrid Methodology: Critical Review and Conclusions

This article results from a collaboration between its two authors within the context of their research project on online gaming communities. The main goal in this contribution to the handbook was not to report results but rather to identify and emphasize the challenges that come with Big Data-driven studies of online communities in order to introduce a hybrid methodology that combines approaches from both computer science and social sciences. This methodology is inspired by several pioneering works in the field of game studies and game analytics (Ducheneaut et al. 2006, 2007; Williams et al. 2006, 2008; Williams 2010; Lewis and Wardrip-Fruin 2010; Medler and Magerko 2011; Drachen et al. 2012; El-Nasr et al. 2013).

For the past 2 years and until now, this collaborative research project has remained exploratory in nature. In that sense, the avenues for further research that we presented throughout this piece constitute a non-exhaustive exploration of the elements that will shape a more elaborate methodological framework. For instance, our questions regarding the autonomous use of computerized systems by social science researchers and the sustainability of both systems and expertise remain unanswered. Moreover, our suggestions, which are formulated in broad strokes, can certainly be perfected and should be thoroughly tested at each step of the

development of methods, in order to refine tools, assess the value of findings, and evaluate their concrete contributions to knowledge.

It is important to emphasize that this type of research, albeit undoubtedly beneficial, requires participants' willingness to invest their time and energy throughout the whole process of the collaboration. Imbalances between skills and contributions can impact the nature of that collaborative work. For instance, an introduction to the vocabulary and logic of computer science might be a major challenge given how unusual this approach is in the social sciences.

Goulden et al. (2017) analyze such challenges through the case study of an interdisciplinary research project between sociologists and computer scientists. Although they introduce this experiment as a failure, their work allows identifying three types of problems ("problems of time, digital plumbing, and going native") that become challenges for researchers attracted to interdisciplinarity. More specifically, it must be noted that sociological research may become "a hostage to the technology's fortunes." In other words, social scientists' increasing dependence on software implies significant risks, especially if this meant that they would require constant technical support. Goulden et al. (2017) suggest that a member of the research team with expertise in computer science always be present during fieldwork in order to minimize technical difficulties. The authors add that "(w)hilst sociologists must recognise that computer scientists 'can only build imperfect systems'" (Sommerville et al. 1993), and that technical issues will always emerge during deployment, computer scientists must be ready to adjust the rhythms of development they are used to" (Goulden et al. 2017). In other words, the hazards of computerized systems should not be the only factors dictating the rhythm and progression of research.

Furthermore, "technological fantasy" and its pitfalls should be avoided. For instance, researchers must beware of diving head first into data-driven science and methods at the expense of theories developed in the social sciences (Purdam and Elliot 2015) or in knowledge-driven science (Kitchin 2014). If they misunderstand the objectives, concepts, and tools of computerized systems, excessive trust in inductive methods' correlative results may also dull social scientists' critical mindset (Leinweber 2007; Elliot and Purdam 2015).

Nevertheless, these shortfalls and challenges are not unsurmountable obstacles to collaboration. Rather, they reinforce the importance of communication between researchers across disciplines. Communication, which literally is a process of "putting (knowledge, experience, etc.) in common," goes beyond abstract interdisciplinarity and gives way to the concrete exchange of questions, worries, and methods toward the production of new knowledge. Yet, as Spiller et al. (2015) remind us, "to achieve that new knowledge, it must also overcome the conventionalities and constraints of the researchers' disciplinary foundations." The authors claim that multidisciplinary teams must theorize a common standard and be ready to stay flexible and critically engaged with their field of origin: "The standard is the anchor, the collaboration, the plasticity." Similarly, Dewulf et al. (2007) stress the importance of sharing a common framework to avoid ambiguities and misunderstandings based on differences between disciplines. However, this move from multidisciplinarity to

interdisciplinarity (Morillo et al. 2003) requires that researchers engage in a substantial learning process:

A set of individuals representing diverse perspectives and interests must learn each other's mental models, learn how to fuse those differences into a collective conceptual framework, and learn how to use that conceptual framework as a springboard to creative problem solving. (Pennington 2008)

While this constitutes demanding work, it is nevertheless essential in the context of the mass digitalization of our social lives, the stakes of which require a better understanding of "the effects of Big Data." According to Barry et al. (2008), interdisciplinarity, between computer science and social science, among others, is "thought to have greatest significance in the transition to a new mode of knowledge production, auguring closer relations between science and society." While the depth of research questions developed in the social sciences can significantly enrich computer science research, especially on an ethical level, "*social science cannot afford not to*" (Goulden et al. 2017) collaborate with computer science. Moreover, Halfpenny and Procter (2015) consider e-research a necessarily collaborative exercise that requires different yet complementary kinds of expertise, in order to meet research objectives that are impossible to meet individually. If this methodological, epistemological, and ethical work has been initiated by the authors cited throughout this chapter, it still remains in its infancy.

References

- Ackland R, Zhu J (2015) Social network analysis. In: Halfpenny P, Procter R (eds) Innovations in digital research methods. Sage, London, pp 221–244
- Ampofo L, Collister S, O'Loughlin B, Chadwick A (2015) Text mining and social media: when quantitative meets qualitative and software meets people. In: Halfpenny P, Procter R (eds) Innovations in digital research methods. Sage, London, pp 161–192
- Anderson C (2008) The end of theory: the data deluge makes scientific method obsolete. *Wired*. <https://www.wired.com/2008/06/pb-theory/>. Accessed 10 Oct 2017
- Anderson RJ, Jirotka M (2015) Ethical praxis in digital social research. In: Halfpenny P, Procter R (eds) Innovations in digital research methods. Sage, London, pp 271–296
- Andrejevic M (2007) iSpy: surveillance and power in the interactive era. University of Kansas Press, Lawrence
- Artstein R (2017) Inter-annotator agreement. In: Ide N, Pustejovsky J (eds) Handbook of linguistic annotation. Springer, Dordrecht, pp 297–313
- Baeza-Yates R, Ribeiro-Neto B (1999) Modern information retrieval. ACM Press, New York
- Barry A, Born G, Weszkalnys G (2008) Logics of interdisciplinarity. *Econ Soc* 37(1):20–49
- Beck K et al (2001) Manifesto for agile software development. Agile manifesto. <http://agilemanifesto.org>. Accessed 10 Oct 2017
- Bennett CJ, Haggerty KD, Lyon D, Steeves V (2014) Transparent lives: surveillance in Canada. Athabasca University Press, Edmonton
- Berendt B, Büchler M, Rockwell G (2015) Is it research or is it spying? Thinking-through ethics in Big Data AI and other knowledge sciences. *Künstl Intell* 29(2):223–232
- Boellstorff T (2013) Making big data, in theory. *First Monday*, 18.10

- Bollier D (2010) The promise and peril of big data. The Aspen Institute. http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/The_Promise_and_Peril_of_Big_Data.pdf. Accessed 10 Oct 2017
- Borgatti SP, Halgin DS (2011) On network theory. *Organ Sci* 22(5):1168–1181
- Borgman C L (2015) Big Data, little data, no data: Scholarship in the networked world. Cambridge: The MIT Press
- Boyd D, Crawford K (2012) Critical questions for big data. *Inf Commun Soc* 15(5):662–679
- Brin S, Page L (2012) Reprint of: the anatomy of a large-scale hypertextual web search engine. *Comput Netw* 56(18):3825–3833
- Brown I, Marsden CT (2013) Regulating code. Good governance and better regulation in the information age. MIT Press, Cambridge
- Burrows R, Savage M (2014) After the crisis? Big Data and the methodological challenges of empirical sociology. *Big Data Soc* April–June:1–6
- Burt RS, Minor MJ (1983) Applied network analysis: a methodological introduction. Sage, London
- Carletta J (1996) Assessing agreement on classification tasks: the kappa statistic. *Comput Linguist* 22(2):249–254
- Chessell M (2014) Ethics for big data and analytics. IBM Big Data Hub. http://www.ibmbigdatahub.com/sites/default/files/whitepapers_reports_file/TCG%20Study%20Report%20-%20Ethics%20for%20BD%26A.pdf. Accessed 10 Oct 2017
- Crampton J et al (2013) Beyond the geotag: situating ‘Big Data’ and leveraging the potential of the geoweb. *Cartogr Geogr Inf Sci* 40(2):130–139
- Dalton C, Thatcher J (2014) What does a critical data studies look like, and why do we care? Seven points for a critical approach to ‘Big Data’. Society and Space. <http://societyandspace.org/2014/05/12/what-does-a-critical-data-studies-look-like-and-why-do-we-care-craig-dalton-and-jim-thatcher/>. Accessed 10 Oct 2017
- Davis K, Patterson D (2012) The ethics of big data: balancing risk and innovation. O'Reilly, Cambridge
- De Castell S et al (2012) Theoretical and methodological challenges (and opportunities) in virtual worlds research. In: Proceedings of the international conference on the foundations of digital games. Raleigh, NC, USA. pp 134–140
- Dewulf A, Francis G, Pahl-Wostl C, Taillieu T (2007) A framing approach to cross-disciplinary research collaboration: experiences from a large-scale research project on adaptive water management. *Ecol Soc* 12(2):14
- Drachen A, Sifa R, Bauckhage C, Thurau C (2012) Guns, swords and data: clustering of player behavior in computer games in the wild. In: Proceedings of IEEE computational intelligence in games. Granada, Spain. pp 163–170
- Ducheneaut N et al (2006) Building an MMO with mass appeal: a look at gameplay in World of Warcraft. *Games Cult* 1(4):281–317
- Ducheneaut N, Yee N, Nickell E, Moore RJ (2007) The life and death of online gaming communities: a look at guilds in World of Warcraft. In: Proceedings of the SIGCHI conference on human factors in computing systems. San Jose, CA, USA. pp 839–848
- Elliot M, Purdam K (2015) Exploiting new sources of data. In: Halfpenny P, Procter R (eds) Innovations in digital research methods. Sage, London, pp 59–84
- Ellul J (1954) La technique ou l'enjeu du siècle. Armand Colin, Paris
- El-Nasr M, Drachen A, Canossa A (2013) Game analytics: maximizing the value of player data. Springer, Londres
- Feenberg A (1999) Questioning technology. Routledge, New York/London
- Gitelman L (2013) “Raw data” is an oxymoron. MIT Press, Cambridge
- Goulden M et al (2017) Wild interdisciplinarity: ethnography and computer science. *Int J Soc Res Methodol* 20(2):137–150
- Halfpenny P, Procter R (eds) (2015) Innovations in digital research methods. Sage, London
- Hastie T, Tibshirani R, Friedman J (2009) The elements of statistical learning. Overview of supervised learning. In: Springer series in statistics. Springer, New York, pp 9–41
- Heidegger M (1977 [1954]) The question concerning technology. Garland Publishing, New York

- Hey T, Trefethen A (2003) The data deluge: an e-science perspective. In: Berman K, Fox GC, Hey AJG (eds) Grid computing: making the global infrastructure a reality. Wiley, New York, pp 855–864
- Illiadis A, Russo F (2016) Critical data studies: an introduction. *Big Data Soc* 3(2):1–7
- Jaimes A, Sebe N, Gatica-Perez D (2006) Human-centered computing: a multimedia perspective. In: Proceedings of the 14th ACM international conference on multimedia. Santa Barbara, CA, USA, pp 855–864
- Kitchin R (2014) Big Data, new epistemologies and paradigm shifts. *Big Data Soc* 1(1). <https://doi.org/10.1177/2053951714528481>. Accessed 10 Oct 2017
- Kitchin R, Lauriault TP (2015) Small data in the era of big data. *GeoJournal* 80(4):463–475
- Langlois G, Redden J, Elmer G (2015) Compromised data : From social media to big data. Bloomsbury, New York
- Lazer D, Kennedy R, King G, Vespignani A (2014) The Parable Google Flu: Traps in Big Data Analysis. *Science* 343:1203–1205
- Leinweber D (2007) Stupid data miner tricks: overfitting the S&P 500. *J Invest* 16(1):15–22
- Lewis C, Wardrip-Fruin N (2010) Mining game statistics from web services: a World of Warcraft armory case study. In: Proceedings of the fifth international conference on the foundations of digital games. ACM, Monterey, CA, USA, pp 100–107
- Mailloux LO, Grimala MR, Hodson DD, Baumgartner GB (2017) The benefits of joining a multidisciplinary research team. *IEEE Potentials* 36(3):18–22
- Mayer-Schönberger V, Cukier K (2014) Big data: a revolution that will transform how we live, work, and think. Eamon Dolan/Mariner, London
- Medler B, Magerko B (2011) Analytics of play: using information visualization and gameplay practices for visualizing video game data. *Parsons J Inf Mapp* 3(1):1–12
- Mittelstadt BD, Allo P, Taddeo M, Wachter S, Floridi L (2016) The ethics of algorithms: Mapping the debate, *Big Data & Society*, July–December: pp 1–21
- Mongeau P, Saint-Charles J (2011) Les approches communicationnelles des groupes dans les organisations. In: Grosjean S, Bonneville L (eds) Communication organisationnelle: approches, processus et enjeux. Chenelière Éducation, Montréal, pp 253–279
- Mongeau P, Saint-Charles J (2014) Centralité de réseaux et similitude de discours : une approche sociosémantique du leadership émergent dans les groupes de travail. *Communiquer. Revue de communication sociale et publique* (12), pp 121–139
- Morillo F, Bordons M, Gómez I (2003) Interdisciplinarity in science: a tentative typology of disciplines and research areas. *J Assoc Inf Sci Technol* 54(13):1237–1249
- Mumford L (1967) The myth of the machine. Volume 1: Technics and human development. Harcourt Brace Jovanovich, San Diego
- Mumford L (1970) The myth of the machine. Volume 2: The pentagon of power. Harcourt Brace Jovanovich, San Diego
- Neff G, Tanweer A, Fiore-Gartland B, Osburn L (2017) Critique and contribute: a practice-based framework for improving critical data studies and data science. *Big Data* 5(2):85–97
- Pennington DD (2008) Cross-disciplinary collaboration and learning. *Ecol Soc* 13(2):8
- Purdam K, Elliot M (2015) The changing social science data landscape. In: Halfpenny P, Procter R (eds) Innovations in digital research methods. Sage, London, pp 25–58
- Pushmann C, Burgess J (2014) Metaphors of Big Data. *Int J Comm* vol. 8, 1690–1709
- Rosa H (2013) Social acceleration: a new theory of modernity. Columbia University Press, New York
- Saint-Charles J, Mongeau P (2005). Communication: Horizon de pratiques et de recherche. Presses de l'Université du Québec, Québec
- Savage M, Burrows R (2007) The coming crisis of empirical sociology. *Sociology* 41(5):885–899
- Scott J (2017) Social network analysis. Sage, London
- Simondon G (1958) Du mode d'existence des objets techniques. Aubier, Paris

- Sommerville I, Rodden T, Sawyer P, Bentley R (1992) Sociologists can be surprisingly useful in interactive system design. In: *People and computers VII: proceedings of HCI 92*. Cambridge University Press, New York, pp 342–354
- Sommerville I, Rodden T, Sawyer P, Bentley R (1993) Sociologists can be surprisingly useful in interactive system design. In: *People and computers VII: proceedings of HCI 92*, York (United Kingdom), Cambridge University Press, New York, pp 342–354
- Spiller K, Ball K, Daniel E, Dibb S, Meadows M, Canhoto A (2015) Carnivalesque collaboration: reflections on ‘doing’ multi-disciplinary research. *Qual Res* 15(5):551–567
- Stiegler B (1994, 1996, 2001) *La Technique et le temps* (3 tomes). Éditions Galilée, Paris
- Williams D (2010) The promises and perils of large-scale data extraction. McArthur Foundation, Chicago
- Williams D, Ducheneaut N, Xiong L, Zhang Y, Yee N, Nickell E (2006) From tree house to barracks: the social life of guilds in World of Warcraft. *Games Cult* 1(4):338–361
- Williams D, Yee N, Caplan SE (2008) Who plays, how much, and why? Debunking the stereotypical gamer profile. *J Comput-Mediat Commun* 13(4):993–1018
- Witten IH, Frank E, Hall MA, Pal CJ (2016) Data mining: practical machine learning tools and techniques. Morgan Kaufmann Publishers, New York
- Zwitter A (2014) Big data ethics. *Big Data Soc* 1(2). <https://doi.org/10.1177/2053951714559253>. Accessed 10 Oct 2017



Big Social Data Approaches in Internet Studies: The Case of Twitter

5

Axel Bruns

Contents

Introduction: “Big Data” and the Computational Turn	66
Twitter as a Source of “Big Social Data”	68
Doing “Big Social Data” Research	72
The Precarity of “Big Social Data” in a Proprietary Environment	74
Conclusion: But Do We Need “Big Data”?	77
References	79

Abstract

Well beyond Internet Studies itself, but arguably led by it to a considerable extent, there has been a turn towards computational methods in the study of social and communicative phenomena at large scale. This “computational turn” has commonly been described as a turn towards “big data” or, more specifically, towards “big social data,” and it continues to drive the development of new research methodologies, approaches, and tools.

Internet Studies has been an advocate of “big data” approaches, because the field connects several core disciplines that use “big data” methods – media, communication and cultural studies, the social sciences, and computer science. Equally, the major objects of research in Internet Studies – including platforms, search engines, mobile apps and devices, and Internet technologies and networks themselves – are key sources of “big data” on user interests, attitudes, and activities. Proponents of such approaches suggest that it is becoming possible to “study society with the Internet,” while others ask critical questions about which observations are privileged and which are discounted as the logic of “big data” influences research agendas.

A. Bruns (✉)

Digital Media Research Centre, Queensland University of Technology, Brisbane, Australia
e-mail: a.brunz@qut.edu.au

The early development and application of “big social data” research methods in Internet Studies, as well as critical interrogations of such approaches, focused especially on research into *Twitter* as a global social media platform. This is largely due to *Twitter*’s (initially) highly accessible application programming interface (API), which enabled the development of powerful research methods and the promise of large, sometimes real-time, datasets tracing patterns of user activity around specific themes and topics on the platform, as well as, by proxy, in wider society.

Twitter’s tightening of API access serves as a reminder of the precarious nature of “big social data” research drawing on proprietary datasets, just as concerns about the use of social media data for the social profiling of individual users raise questions about research ethics and user privacy. The growing body of “big data” research drawing on *Twitter* as a data source has paradoxically also underlined the many limitations and blind spots of such approaches, as researchers drawing on publicly available API data struggle to place their findings in the context of a platform whose overall global shape is shrouded in considerably more mystery, due to Twitter, Inc.’s interest in keeping aspects of the platform and its user community commercial-in-confidence. The increased work in this field also highlights shortcomings in research training and publishing models, which need to be addressed to further develop “big social data” research.

This chapter outlines the current state of the art in computationally driven Twitter research, using platform-specific research as a case study for the computational turn in Internet Studies. It will consider the opportunities and challenges inherent in this shift toward more data-driven research and outline the key needs for the discipline which have emerged to date. Even as Twitter’s own fortunes fluctuate, the experiences made in this branch of Internet Studies stand as a guide for broader developments in our field.

Keywords

Social media · Big data · Twitter · Mixed methods · Abductive research

Introduction: “Big Data” and the Computational Turn

Internet Studies has always been a hybrid field which connects disciplines as diverse as cultural studies and computer science and draws on methods ranging from ethnographic observation to social network analysis. This has been the cause of tensions and disconnects that have often also been highly productive, as they have required researchers from diverse disciplinary backgrounds to at least acquire a basic fluency in each other’s languages in order to be intelligible to one another – but at times, it has also furthered existing divisions between the disciplines that have kept them from developing a more collaborative approach to addressing common research questions and problems.

The importance of finding a common language between researchers and research groups who would variously describe themselves as more “quantitative” or more

“qualitative,” more “computational” or more “interpretive” in their underlying methodological orientation has grown further in recent years by the greater scientific and popular focus on “big data,” and such datasets’ increasing relevance to the field of Internet Studies. Digital, online processes are a particularly prominent generator of “big data,” as user activities in social media spaces, with mobile devices, or using the Internet in any other form (including the growing “Internet of Things”) are each leaving trails of data and metadata that are increasingly persistent. The existence of such highly detailed data trails, often at a resolution that enables the identification of individual users and devices, and the tracing of their activities on a second-by-second basis, has resulted in significant scholarly, commercial, and governmental interest in these “big data” sources, variously aiming to develop better understandings of collective processes in society, more effective and personalized advertising and marketing mechanisms, or more comprehensive surveillance and intelligence systems. At the same time, substantial debate about the ethical and privacy implications of such “big data”-enabled research, and about the general desirability of these developments, has also arisen (e.g., boyd and Crawford 2012; Andrejevic 2014), and we explore some of these questions in the discussion below.

The emergence of “big data” introduces a number of key changes to the research process. First, the existence of more comprehensive datasets that appear to present whole-of-population patterns enables a move away from approaches that draw only on convenient or representative population samples constructed by the researcher; this, in turn, may also support a more fine-grained analysis of minor patterns that may not have appeared clearly enough in such more limited samples. Second, any approach that seeks to work with entire, large datasets must necessarily confront new challenges in processing, analyzing, and presenting the patterns observed in such datasets, drawing on advanced computational tools and techniques for data analytics and visualization. Finally, this also complicates the presentation and critical evaluation of research outcomes in scholarly and other contexts, especially as far as peer review and research replicability are concerned, as academic peers rarely have access to the same datasets and analytical tools and may not yet have the data analysis skills required for following the discussion.

In a scholarly context, then, this emerging interest in doing research that incorporates the analysis of such very large and often dynamically growing real-time datasets has been described by Berry (2011) as a new “computational turn” especially in the humanities and social sciences, where it represents a marked departure from earlier approaches that had drawn only on considerably smaller datasets which did not require the use of computational methods for their analysis. To some extent, this computational turn in what are now often being described as the “digital humanities” (cf. Arthur and Bode 2014) can thus also be seen as an interdisciplinary turn, as it requires humanities researchers to connect with or at the very least learn from computer science in order to add further computational approaches to their conventional methodological toolkit; conversely, in doing so there may also be a corresponding “social turn” in computer science, as the analytical methods developed in that field are increasingly applied to real-world social science research problems. As a natural nexus between these disciplines, Internet Studies is well positioned to

facilitate and benefit from these convergent turns, as well as to critically examine the methodological and conceptual problems that may arise from them.

A particular driver of such attempts at disciplinary convergence is the area of research that draws centrally on what are sometimes described as “big social data” (Manovich 2012; Burgess and Bruns 2012): the large-scale, real-time datasets on social interactions on the Internet – and particular in popular social media spaces such as *Facebook* and *Twitter*. Such datasets are able to trace in significant detail, and on an ongoing basis, the ways in which Internet users are engaging with and responding to the events taking place in the world that surrounds them, and proponents of such “big social data”-driven research have therefore argued that their approaches may enable Internet Studies to transition from “researching the Internet” to “studying culture and society *with the Internet*” (Rogers 2009: 29) – that is, to use observations on patterns of online interaction as a lens through which to perceive society as such. Critiques of this view point out, however, that this lens is, at best, a flawed and distorted one, due to the various particularities and limitations of the datasets upon which it relies (cf. boyd and Crawford 2012); it is therefore important at the very least not to lose sight of the specificities of the underlying datasets if any generalization from the observable online to the more fundamental societal patterns is to be attempted.

This chapter, then, outlines the state of the art in contemporary *Twitter* research as a representative example of the broader computational turn and its implications for Internet Studies. We explore especially the continuously evolving conditions for accessing and using “big social data” from *Twitter*, and their implications for the conduct of rigorous and sustainable research into the uses of *Twitter* and their interrelationship with wider societal practices. We also examine the needs for digital methods training and methodological development that have emerged from the *Twitter* research experience over the past decade and discuss the issues that arise from the precarious situation of working with datasets provided by a commercial entity whose politics and policies are shifting almost constantly. Independent of *Twitter*’s own further trajectory, the experiences made in this branch of Internet Studies stand as a guide for broader developments in our field.

***Twitter* as a Source of “Big Social Data”**

Twitter has become a particularly common example for the computational turn in Internet Studies because of its traditionally relatively permissive approach to providing large datasets on user activities to scholarly and industry researchers, and because of the at least relatively limited ethical and privacy concerns in working with *Twitter* data. The overall network and communicative structure of *Twitter* is simple: users can choose between making their accounts globally public, which results in their profiles and posts being visible even to nonregistered visitors to the *Twitter* Website, and setting their accounts to “protected,” which means that the full profile and its posts are visible only to the account’s followers, and that these followers must be individually vetted and approved by the account holder before they gain access to

the posts. As of September 2013, only some 5% of all 843 million *Twitter* accounts were “protected” in this way (Bruns et al. 2014a); the overwhelming majority of *Twitter* profiles and their posts are publicly available on the Web and potentially indexed in various search engines. This is markedly different from the situation for other major social media platforms such as *Facebook*, then, where the vast majority of profiles and posts are visible only to approved “friends” of a user, or where visibility can be adjusted on a post-by-post basis and may range from “private” through “friends only” and “friends of friends” to “public.”

Researchers may therefore generally infer that *Twitter* users understand that posts made by their non-“protected” *Twitter* accounts are publicly visible in the same way that material posted to other public Websites is publicly visible; this does not imply that such users are also necessarily aware of the potential for their posts to be included in data collections and analyzed by scholarly or other researchers, however, and should therefore also not be seen as an implicit permission for researchers to publish research that contains detailed individual profiling of ordinary users’ activities. However, as far as data collection itself is concerned, the very publicness of *Twitter* content is widely accepted by researchers, and by the ethics review boards which oversee their activities, to be sufficient support for the argument that gathering profile and post data from *Twitter* without the express personal consent of each user included in the collection is acceptable in terms of ethics and privacy.

Traditionally, such data collection from *Twitter* has been enabled by a comparatively open and powerful Application Programming Interface (API) that allowed large-scale collection of profile information and tweets. The *Twitter* API is not primarily designed for research purposes but supports a range of uses – most importantly, it enables the functionality of a range of third-party *Twitter* clients such as *Tweetdeck* (subsequently purchased by Twitter, Inc.) and *Hootsuite*, as well as of the various apps for smartphone and tablet devices which Twitter, Inc. itself provides. However, the API functions that enable such apps to search for specific keywords and hashtags or to subscribe to a stream of updates from a given set of users or containing selected search terms are equally useful for researchers seeking to construct datasets that relate to specific events or user populations, and a range of *Twitter* data capture solutions for research and related purposes gradually emerged as *Twitter*’s growing popularity since its launch in March 2006 made it an increasingly interesting object of and environment for research.

While some of these solutions remained strictly in-house tools developed by specific research groups, others – such as the early standard *Twapperkeeper* – were set up as public services available to any researcher who registered on their Websites. Twitter, Inc. also explicitly supported some of these research initiatives by operating a “whitelisting” scheme, while for the majority of API users, a range of access limits applied (restricting the maximum number of accounts or keywords that any one API client could follow, or the maximum throughput of content returned by the API), the standard limits could be eased for those developers and researchers who made an informal, well-justified request to the *Twitter* developer support team. This supportive, unbureaucratic access regime resulted in the emergence of a growing developer and researcher ecosystem around the fledgling social network as it evolved.

As a result, the field of *Twitter* research also flourished, covering an increasing breadth of topics that ranged from crisis communication (Hughes and Palen 2009; Mendoza et al. 2010; Palen et al. 2010) through political discussion (Golbeck et al. 2010; Larsson and Moe 2011; Vergeer and Hermans 2013) to collective audiencing (Harrington et al. 2013; Highfield et al. 2013) and building on a variety of more and more sophisticated methods and tools that especially sought to establish more powerful frameworks for dealing computationally with near-live and increasingly large datasets. The widespread use of a handful of publicly available and/or open-source research tools also contributed to a gradual standardization of basic analytics methods, enhancing the compatibility and comparability of methods and studies (Bruns and Stieglitz 2012, 2013). Studies of the roles played by *Twitter* in the context of various major events – such as the 2009 Iranian presidential election (Gaffney 2010; Rogers et al. 2009), 2010 Haiti earthquake (Bruno 2011; Sarcevic et al. 2012), or 2011/12 Arab Spring uprisings (Lotan et al. 2011; Mourtada and Salem 2011; Meraz and Papacharissi 2013) also generated significant public attention, and provided Twitter, Inc. with valuable independent evidence for its growing role in public communication.

Not all such studies should necessarily be understood as drawing on “big social data” in any meaningful definition of the term. Some built, for example, on datasets of hashtagged *Twitter* conversations containing no more than some thousands or tens of thousands of tweets – sizeable collections, certainly, but hardly of a magnitude that requires a radical shift towards entirely new computational methods designed specifically for very large datasets. (It should be noted in this context that the boundaries of what is “big” in “big data” have remained notoriously undefined – one not entirely tongue-in-cheek definition, however, is of “big data” as anything that exceeds the maximum of 1,048,576 data rows that are allowable in current versions of Microsoft Excel.) However, these small-scale studies often proved to be the stepping stones towards much large-scale research projects which rapidly exceeded the processing power of conventional research tools: from examining the role of *Twitter* in comparatively minor and localized natural disasters to tracking the millions of tweets responding to the March 2011 earthquake, tsunami and still unresolved nuclear disaster on the Japanese east coast (Acar and Muraki 2011; Doan et al. 2012); from exploring the 2009 presidential election in Iran to investigating its 2012 counterpart in the United States (Conway et al. 2013; Bruns and Highfield 2016); from tracking audience engagement with a one-off media event to developing comprehensive longitudinal metrics for the use of *Twitter* as a back-channel for sharing and commenting on mainstream media content in an entire national mediaspace (Bruns et al. 2013, 2014b). Here, new computational methods for data access, processing, storage, and analytics quickly emerged as necessary requirements.

This growth in and broadening of research approaches in recent years reflects not only the increasing importance of *Twitter* in global public communication but also the gradual realization that earlier, more limited research approaches continued to have significant blind spots. This realization is reflected especially in a gradual

move beyond the initial overreliance on what may be described as “hashtag studies” (Burgess and Bruns 2015). Early *Twitter* research, drawing on the most obvious affordances of the *Twitter* API and the available data capture tools, proceeded especially by capturing and analyzing datasets that were defined by the presence of a specific thematic hashtag in the data – from terms such as #ausvotes for Australian federal elections (Bruns and Burgess 2011) to #sandy for the 2012 hurricane on the US east coast (Hughes et al. 2014). But such datasets necessarily cover only a self-selecting subset of all *Twitter* uses relating to the same events; they include only those tweets which their authors chose to mark as relevant to the topic, by including one particular hashtag. Exchanges using competing or complementary hashtags, or topically relevant but nonhashtagged conversations, remain excluded from these datasets unless researchers went to the trouble of tracking a variety of alternative hashtags and keywords, perhaps even updating that list of terms to be included in real time as the event unfolded and user practices evolved.

Such “hashtag studies,” even where they are expanded to cover multiple parallel hashtags and keywords, constitute only one approach to investigating the uses of *Twitter* in relation to specific themes, topics, and events, therefore. An alternative approach is to examine the activities by and around selected populations of *Twitter* accounts: for example, by capturing all of the public tweets that originate from, or reference in the form of @mentions and retweets, a set of public figures, political actors, or random selection of ordinary users. Undertaken for example for all of the *Twitter* accounts operated by current Members of Parliament and parliamentary candidates in a national election (cf. Bruns 2014), this is likely to shed a very different light on the visibility of and response to these various politicians, compared to an analysis of the self-selecting stream of hashtagged commentary on the election – and in comparison, the account-centric and hashtag-centric analyses may evaluate the extent to which the hashtag conversation is at all representative of the wider *Twitter* debate relating to the election. Similarly, through the *Twitter* search API, it is also possible to capture the tweets which contain links to specific domains (even if those links have been shortened using *Twitter*’s mandatory URL shortener *t.co* and/or other shortening services); independent of selected hashtags and keywords, and of specific user populations, this can generate a comprehensive perspective on the dissemination of particular information across the Twittersphere (cf. Bruns et al. 2013; Bruns and Sauter 2015).

Inter alia, it is thus possible to use the *Twitter* API to track and capture on a continuous basis the tweets that contain selected hashtags and keywords, are posted by or reference in their @mentions and retweets a selection of accounts, or link to particular content on the Web. In combination, this results in larger, hybrid, and more complex datasets that cover a broader range of user activities than the early “hashtag studies” alone had been able to do; this considerably expands the ability of *Twitter* research to explore how the platform is used. The datasets resulting from such approaches are likely to be substantially larger and more inclusive, forcing researchers to confront the computational and analytical challenges associated with “big social data” at a scale that truly deserves this

description. This places significant additional importance on the various software tools used for such work.

Doing “Big Social Data” Research

Typical trends in data-driven *Twitter* research have been shaped in a number of ways by the research tools and platforms available to researchers. We have already noted *Twapperkeeper* as an early standard framework for gathering *Twitter* data in relation to hashtags, keywords, and other search terms – at first in its online incarnation as Twapperkeeper.com, and subsequently, after Twitter, Inc. forced the closure of this public service, as an open-source data gathering framework called *yourTwapperkeeper* which potential users had to install on their own servers. Notably, in both versions, *Twapperkeeper* only ever captured a subset of the full metadata delivered by the *Twitter* API alongside every tweet matching the tracking criteria set by the user; this selective retainment of the data also considerably influenced the direction of the research projects which utilized this tool and influenced the development of the standard *Twitter* activity metrics which could be extracted from the data (Bruns and Stieglitz 2013). Such divergences in the capabilities of data capture and management tools only emerge fully in comparisons between different research tools, however: at a time when (*your*)*Twapperkeeper* was by far the most prominent and most widely used tool for gathering data from *Twitter*, the vast majority of researchers treated it in essence as a neutral “black box” through which the data stream passed on its way from the API to the researcher but which needed little critical attention.

More recent, alternative frameworks for gathering data from the *Twitter* API, such as the *Twitter Capture and Analysis Toolset (TCAT)* developed by the Digital Media Initiative at the University of Amsterdam, have served to reveal in more detail some of the differing data gathering and processing approaches which are possible even while using the same *Twitter* APIs. *TCAT* pays considerably more attention to the limits of the *Twitter* API, for example: while using *Twapperkeeper* it is possible to add considerably more tracking terms than the free and open API is able to serve under current API access restrictions, resulting in the exclusion of an unknown volume of data from the datasets returned by the API, *TCAT* also captures the alerts which highlight that data are missing from the results returned by the API. This does not in itself enable the researcher to address these gaps in the data, but it at least creates an awareness that such gaps may exist and enables the researcher to provide an estimate of how many tweets were missed. By contrast, similar gaps may be present in the datasets upon which much of the published research which used *Twapperkeeper* builds – but without the authors of such work being aware of, or able to quantify, the extent of these gaps.

Even as simple an example as this already highlights the need for Internet Studies researchers to move beyond an understanding of their “big data” research tools as unproblematic “black boxes” which require no further discussion. In the first place, it is incumbent on any social media researcher to become intensely familiar with the

functionality and limitations of the data access APIs they rely on, and of the data gathering tools they may use to connect to the API; further, especially in conducting “big data”-driven research that relies inherently on computational methods for filtering, processing, analyzing, and visualizing the data, it is also crucial for the researcher to examine very closely the operational assumptions embedded into the various softwares used at every step of the way. Unfortunately, there still persists in many published studies a tendency to skip a clear consideration of the processing choices made by researchers, especially prominently perhaps in discussing the data visualization approaches employed.

As research moves further towards the use of truly “big” datasets, which generate increasing data processing complexities and often require the development of custom-made analytics tools, such oversights become especially problematic, as they complicate the independent peer review and replicability of research results. But even before the research advances to a publishable state, there is a danger that the need for a closer collaboration between social scientists and computer scientists which such large datasets engender may result in the treatment of the work of computer science overall as such a black box, whose in-built assumptions about the most appropriate ways to process the datasets for further analysis are never checked or discussed by the interdisciplinary team. To avoid this, it is crucial for both sides to seek to understand each other’s ways of working, to learn each other’s disciplinary languages and to develop at least a basic literacy of each other’s methods. For humanities and social science scholars seeking to work with “big social data,” this is likely to require the acquisition of functional mathematical and statistical knowledge and of some entry-level programming skills at the very least.

If such obstacles to successful collaboration on “big social data” research projects can be addressed, a further challenge lies in the development of effective and appropriate data management and publication processes and protocols. Even where – as in the case of *Twitter* – researchers deal exclusively with ostensibly published material, it must be remembered that the individual users whose posts and profiles are included in the dataset are most likely unaware of the full extent of contemporary data analytics methods, and may understand *Twitter* to be a considerably more ephemeral communicative medium than it is from the researcher’s or analyst’s perspective. There is significant potential for social media research to engage in an in-depth profiling of individual users, but such research activities are in many cases likely to be inappropriate, especially where their outcomes are published in an identifiable or reidentifiable form; researchers will need to decide carefully, on an individual basis, what level of individual profiling is appropriate in each case. While it may be acceptable to study in detail the posting patterns of an individual, but ultimately institutional *Twitter* account such as @barackobama, for instance, the same is not true for the account of an ordinary *Twitter* user commenting on Barack Obama’s policies; however, it *may* be defensible again for the account of one of the most active ordinary users @mentioning or retweeting @barackobama, as its activities will already be highly visible to other *Twitter* users. Other than to generally err on the side of caution in each case, there is no generalizable advice that can be offered to researchers on these points; rather, a careful consideration of

the implications of the published research for the users whose activities it highlights is necessary in each case. A range of considered guides for addressing such questions – such as the Association of Internet Researchers' ethics guidelines (<http://aoir.org/ethics/>) – are now emerging from within the research community itself.

Considerable further work also still remains to be done in developing the appropriate formats for publishing “big social data” research. At present, few published studies in relevant journals and similar environments include the raw data, due to the restrictions imposed by the terms and conditions of the *Twitter API* as much as to the limitations of contemporary publishing formats; they also leave relatively little space for a considered discussion of the methodological choices made in processing and visualizing the data. Further, the static format for publishing graphs and tables which even online journals have inherited from the print format is often less than ideally suited to the publication of detailed analytics drawn from large-scale, live datasets; it would be more appropriate to publish such graphs as interrogatable, dynamic data dashboards that enable the readers (and before them, the reviewers) to replicate the analytical steps taken by the authors, and test a variety of other approaches to understanding the data patterns. The tools for creating and publishing such interactive dashboards are beginning to emerge, but their adoption remains unlikely as long as scholarly journals remain closely wedded to the print paradigm (also cf. Bruns 2013).

Such *caveats* should not be seen as an indication that no valuable *Twitter* research drawing on “big social data” has as yet been published – this is evidently untrue. However, for all of the initial enthusiasm and considerable energy invested into doing large-scale *Twitter* research, arguably the full potential of such approaches has yet to be realized by scholarly researchers; the field has a considerable part of the path towards greater maturity still ahead of it. Whether it can continue to progress further along this path, however, also depends on the further development of Twitter, Inc.’s increasingly problematic data access policies and on the development of a better understanding of the advantages and pitfalls of “big social data” research that draws on *Twitter* data. Paradoxically, the growing scale of *Twitter* research that has resulted from the gradual adoption of such computational research approaches has also served to highlight the many limitations and blind spots of “big social data”-driven *Twitter* analysis more clearly.

The Precarity of “Big Social Data” in a Proprietary Environment

Although *Twitter* has traditionally proven to be a fruitful environment for Internet Studies, more recent changes to API access policies introduced by Twitter, Inc. have resulted in considerable disruptions to the research process. As noted, *Twitter*’s API has always been subject to access throttling, ostensibly in order to prevent frivolous, erroneous, or malicious API requests from absorbing excessive bandwidth, but such limits could be removed on a case-by-case basis by *Twitter*’s developer support team. The granting of such on-demand exceptions has ceased, and successive changes to API rules have considerably limited the number of API requests which could be made by any one client in a given 15-minute window; truly large-scale data

gathering directly from the *Twitter* API is therefore no longer easily possible, except where researchers again restrict themselves to tracking relatively simplistic hashtag or keyword collections.

In its pursuit of additional revenue sources following its listing on the New York Stock Exchange, Twitter, Inc. has increasingly encouraged API users with more complex data needs to work with one of a number of commercial third-party data resellers, such as Gnip or Datasift, but these services are designed largely for major industrial clients and generally priced beyond the reach of publicly funded research institutions; notably, too, Twitter, Inc. bought up Gnip in 2014 and announced the termination of its data access arrangement with Datasift in early 2015 (Lunden 2015), resulting in a virtual monopoly for Twitter, Inc.'s subsidiary Gnip as the only fully authorized *Twitter* data reseller. The company has attempted to mollify scholarly researchers and other noncommercial data users by pointing to its widely publicized 2010 gift of the entire, continuously growing *Twitter* archive to the US Library of Congress, but as of mid-2015, this archive remains inaccessible to researchers as Twitter, Inc. and the Library attempt to come to an agreement on the modalities of access to this resource; Twitter, Inc. also operated a competitive "Twitter Data Grants" process in 2014 which provided large-scale data access to the winning research projects, but with only 6 out of more than 1300 applications chosen to receive such access (Kirkorian 2014), the Data Grants amounted to little more than a data lottery – and the experiment appears not to have been repeated in subsequent years.

Such increasing data precarity is especially problematic given the growing need for "big data" on the Twittersphere which the first generation of *Twitter* research activities has demonstrated more and more emphatically. Such early work has been exceptionally successful in demonstrating the incorporation of *Twitter* into a very broad range of communicative practices, and thus also in documenting the relevance of *Twitter* as a leading social media platform especially in the context of real-time public communication; Twitter, Inc. itself has materially benefitted from this research as it has encouraged government bodies and corporate partners to develop their *Twitter* presences, by being able to point to such independent scholarly assessments of the platform's importance and influence. However, at the same time, this early work has also highlighted a significant lack of context for the individual case studies which have been conducted; for example, although research has been able to chart the growing user engagement with specific events and activities (such as the growth in user activity from one national election to the next or from one Academy Awards broadcast to another), what is as yet entirely absent from the published record is any indication of the overall *Twitter* activity baselines that these specific events compare to.

While we may take note of the volume of tweets relating to the latest US presidential election, for instance, it remains unclear what average level of ordinary daily tweeting activity (in the USA or globally) this compares to, and whether tweeting about the election has thus remained the practice of a self-selecting few who may be highly notable because of their elevated levels of participation but are also highly unrepresentative of an otherwise politically apathetic majority – or whether, conversely, there was a truly demotic adoption of *Twitter* as a channel for

discussing the election campaign as it unfolded. Fundamentally, in spite of a handful of updates from Twitter, Inc.’s internal developer team, serving largely as corporate PR, and a small number of isolated research projects such as the Silicon Graphics-supported “Global Twitter Heartbeat” project (Silicon Graphics 2015), there is no independently verifiable scholarly data on global or national *Twitter* usage patterns, and up-to-date figures on user activity are limited to statements in Twitter, Inc.’s reports to shareholders and headline figures on *Twitter*’s ‘About’ page, which at the time of writing boasted 288 million “monthly active users” and 500 million tweets per day, globally (Twitter, Inc. 2015).

Even those Internet researchers who have by now developed the skills and frameworks for working with “big social data” from *Twitter* and other social media platforms, and could thus shed additional light on more detailed usage patterns, are therefore ultimately limited by the severely restricted nature of access to truly large-scale datasets on *Twitter* usage. As Twitter, Inc.’s earlier, much more permissive and cooperative stance towards valuable, independent, publicly funded research has evaporated, such researchers are now forced by the company’s current policy to decide between investing considerable time to seek the elusive funds or corporate sponsorships that would enable them to buy access to the *Twitter* “firehose” (the live feed of all tweets around the world), or exploring the very limits of what is acceptable under the terms and conditions of the standard *Twitter* API. They are prohibited by current terms and conditions even from publicly sharing their datasets with fellow researchers, a policy which is inherently in conflict with the increasing number of national research frameworks that require publicly funded research to make its findings *and* its datasets public, and which – based on anecdotal evidence – a substantial number of scholarly *Twitter* researchers choose to ignore.

Such significant restrictions to working with “big social data” from *Twitter*, and indeed the repeated, abrupt, and often ill-considered shifts in Twitter, Inc.’s data politics (cf. Puschmann and Burgess 2014), ultimately position *Twitter* as a particularly precarious object of, and space for, data-driven research. Although comparatively simple “hashtag studies” of *Twitter*-based phenomena certainly remain possible, more complex, truly “big data” work is becoming increasingly more difficult and potentially unsustainable, unless significant financial and institutional backing can be found by the researchers seeking to undertake it. Should the evolution of Twitter, Inc.’s corporate policies towards a heavy-handed commercialization of data access continue on its present trajectory, it is possible that the “big data” moment in *Twitter* research may conclude prematurely – and as the growing industry and scholarly focus on “big data” highlights the utility of such data sources, this development may be a harbinger of trends in data access well beyond *Twitter* itself. “Big social data,” and “big data” more generally, may well also turn out to be a synonym for “expensive data”; this is perhaps especially likely in the field of Internet Studies, where so many of the online phenomena that researchers may wish to study are ultimately taking place on proprietary platforms whose operators would have the ability to control and monetize access to their data.

Conclusion: But Do We Need “Big Data”?

Working with “big data” should never be an end in itself, of course; such data sources must be used to address meaningful questions that could not be addressed merely by using more conventional research approaches. A growing number of critical publications have pointed out that in the current “big data” goldrush, such principles are at times ignored or forgotten; it must be acknowledged that there is for some researchers a fascination simply with big numbers in the datasets, even where an increase in quantity (for example, in the number of tweets processed to obtain a certain result) does not measurably improve the quality of the research results. By extension, the same may also apply for funding bodies, research administrators, and the media; for instance, research outcomes based on a superficial analysis of tens of millions of tweets can turn out to be easier to present (or “sell”) as meaningful and representative than those resulting from in-depth interviews with a dozen users, even though it is possible that the small-scale, deep qualitative engagement with users has generated considerably greater insights than the large-scale, surface quantitative analysis of their social media posts. Part of the backlash against a headlong rush to “big data” is certainly also driven by the perception that proponents of such “big data” research are not treated with the level of critical scrutiny that their (and indeed, any) chosen research approaches should be objected to.

Articles such as boyd & Crawford’s “Critical Questions for Big Data” (boyd and Crawford 2012), and a number of follow-on contributions which were sparked by their provocation, have helped significantly to foster such critical scrutiny; far from being uncritically celebrated, the idea of “big data” has now been problematized, and – quite appropriately – the utilization of “big data” methods and resources must now be sufficiently justified in most research proposals and publications. This is true for research in the social sciences, at least, where the “big data” debate has been conducted most critically and forcefully; in computer science, a somewhat less critical mindset may still prevail. To fully rehearse the arguments of that debate would be beyond the scope of the present chapter; rather, it is necessary here simply to reaffirm that “big social data” research must always also critically review the provenance and quality of its datasets and the abilities and applicability of the methods used to process them, and that the aim in working with such datasets should never be the use of “big data” in itself, but to use these datasets to address meaningful questions beyond the data.

By extension, this is also a call to avoid a simplistic juxtaposition of “qualitative” and “quantitative” research methods and approaches, as if these were always so easy to divide apart. Beyond the most basic descriptive “big data”-supported research, which is content simply to present an overview of the metrics of social media participation but fails to provide any further discussion and interpretation of those observations, the reality that is currently emerging in advanced *Twitter* research, for example, is one that draws inherently on mixed-methods approaches; here, the computational, quantitative evaluation of very large datasets may be

utilized, for instance, to pinpoint specific subsets of the data that are then subjected to further qualitative analysis in the form of a close reading of tweets, or of in-depth interviews with key participants – or alternatively, an initial qualitative investigation of specific social media phenomena may provide the basis for the establishment of a corpus of key terms or a population of target accounts whose further social media careers are then tracked and analyzed using large-scale qualitative methods. In the best of these projects, “big data” from computational approaches and “deep data” from more conventional sources are integrated to form hybrid data structures that can provide considerably more valuable insights than their constituent parts are able to do on their own.

Such research, then, is data-driven not in the negative sense that the investigation it conducts is predetermined by the externally imposed limitations of the datasets it is able to access; rather, it is data-driven in the positive sense that a deep but explorative engagement with the newly available sources of “big social data” enables researchers to preliminarily identify previously unknown or merely suspected patterns in communicative behavior which can then be subjected to further rigorous analysis using mixed methods than combine qualitative and quantitative approaches. This can be described as a neither purely inductive nor entirely deductive process which instead takes an abductive approach: initially, “no logical or empirical connection is required, merely spotting patterns in the data. The results of abduction, however, are not necessarily logically or scientifically coherent; they need to be properly tested, either deductively or inductively, or both.” What results is a “three-step process of abductive hypothesis forming, deductive theory construction, and inductive empirical testing” (Dixon 2012: 201 f.).

To proceed with this abductive model to developing and testing research hypotheses, “big social data” can be extremely valuable. The approach suggested by this model is one of oversampling: gather substantially more data than would be needed to address a preexisting research question; detect patterns in the data; then develop and test the theoretical framework that may explain such patterns. By contrast, for reasons of economy (in terms of money, time, and intellectual effort), the more conventional approach in Internet Studies and related disciplines has been to gather just enough data to test and prove (or disprove) a theory. Only the recent increase in the availability of “big social data,” and of the computational tools to process them, to a wider range of researchers has made the widespread adoption of such abductive approaches possible. The large, comprehensive datasets on communicative exchanges on *Twitter* that extend beyond selected hashtags, keywords, or user populations that have become available in the course of these developments, then, provide a rich resource that can be used to develop and test many old and new questions about how human (and nonhuman) actors communicate at scale and in real time through contemporary online media platforms – and the work done on these questions in *Twitter* is only one example of a broader range of studies that also examine many other social and other media spaces. But crucially, such work must show an awareness of the specific implications of the methodological choices it makes – more so, arguably, than it has to date.

Further, and of most immediate importance, in the case of *Twitter*, the very potential for an abductive approach to developing and testing theory which “big social data” holds, and which has been demonstrated already at least in a handful of major studies that draw on *Twitter* data, is now intensely threatened by the gradual clamp-down on data access via the *Twitter* API in favor of commercial solutions. *Twitter* research has been a key example for the possibilities of “big social data” research in recent years – but as scholarly researchers are locked out of higher-volume API access and priced out of the commercial data market, there is a significant danger that what remains of this field is once again only a collection of considerably more limited hashtag studies.

References

- Acar A, Muraki Y (2011) Twitter for crisis communication: lessons learned from Japan’s tsunami disaster. *Int J Web Based Commun* 7(3):392–402
- Andrejevic M (2014) Surveillance in the big data era. In: Pimple KD (ed) Emerging pervasive information and communication technologies (PICT): ethical challenges, opportunities and safeguards. Springer, Dordrecht, pp 55–69
- Arthur PL, Bode K (eds) (2014) Advancing digital humanities: research, methods, theories. Palgrave Macmillan, Hounds Mills
- Berry D (2011) The computational turn: thinking about the digital humanities. *Cult Mach* 12:1–22
Retrieved from <http://www.culturemachine.net/index.php/cm/article/view/440/470>
- boyd d, Crawford K (2012) Critical questions for big data. *Information. Commun Soc* 15(5):662–679
- Bruno N (2011) Tweet first, verify later? How real-time information is changing the coverage of worldwide crisis events. Reuters Institute for the Study of Journalism, University of Oxford, Oxford Retrieved from <https://reutersinstitute.politics.ox.ac.uk/sites/default/files/Tweet%20first%20C%20verify%20later%20How%20real-time%20information%20is%20changing%20the%20coverage%20of%20worldwide%20crisis%20events.pdf>
- Bruns A (2013) Faster than the speed of print: reconciling “Big Data” social media analysis and academic scholarship. *First Monday*, 18(10). Retrieved from <http://firstmonday.org/ojs/index.php/fm/article/view/4879>
- Bruns A (2014) Twitter in the 2013 Australian election. Paper presented at the Australia New Zealand workshop on campaign management and political marketing, Sydney, 17–18 July 2014
- Bruns A, Burgess J (2011) #ausvotes: how Twitter covered the 2010 Australian federal election. *Commun Polit Culture* 44(2):37–56 Retrieved from <http://eprints.qut.edu.au/47816/>
- Bruns A, Highfield T (2016) May the best tweeter win: the Twitter strategies of key campaign accounts in the 2012 US election. In: Bieber C, Kamps K (eds) The United States presidential election 2012. Springer, Wiesbaden, pp 425–442
- Bruns A, Sauter T (2015) Anatomie eines Trending Topics: Retweet-Ketten als Verbreitungsmechanismus für aktuelle Ereignisse. In: Maireder A, Ausserhofer J, Schumann C, Taddicken M (eds) Digitale Methoden in der Kommunikationswissenschaft. Berlin: Institut für Publizistik und Kommunikationswissenschaft, Freie Universität Berlin, pp 141–161
- Bruns A, Stiegartz S (2012) Quantitative approaches to comparing communication patterns on Twitter. *J Technol Hum Serv* 30(3–4):160–185. <https://doi.org/10.1080/15228835.2012.744249>
- Bruns A, Stiegartz S (2013) Towards more systematic Twitter analysis: metrics for tweeting activities. *Int J Soc Res Methodol* 16(2):91–108. <https://doi.org/10.1080/13645579.2012.756095>

- Bruns A, Highfield T, Harrington S (2013) Sharing the news: dissemination of links to Australian news sites on Twitter. In: Gordon J, Rowinski P, Stewart G (eds) *Br(e)aking the news: journalism, politics and new media*. Peter Lang, New York, pp 181–210
- Bruns A, Woodford D, Sadkowsky T (2014a) Exploring the global demographics of Twitter. Paper presented at the Association of Internet Researchers conference, Daegu, 22–25 Oct 2014
- Bruns A, Woodford D, Highfield T, Prowd K (2014b) Mapping social TV audiences: the footprints of leading shows in the Australian Twittersphere. Paper presented at the Association of Internet Researchers conference, Daegu, 22–25 Oct 2014
- Burgess J, Bruns A (2012) Twitter archives and the challenges of “Big Social Data” for media and communication research. *M/C Journal* 15(5). Retrieved from <http://journal.media-culture.org.au/index.php/mcjournal/article/viewArticle/561/0>
- Burgess J, Bruns A (2015) Easy data, hard data: the politics and pragmatics of Twitter research after the computational turn. In: Langlois G, Redden J, Elmer G (eds) *Compromised data: from social media to big data*. Bloomsbury, London, pp 68–88
- Conway BA, Kenski K, Wang D (2013) Twitter use by presidential primary candidates during the 2012 campaign. *Am Behav Sci* 57(11):1596–1610
- Dixon D (2012) Analysis tool or research methodology: is there an epistemology for patterns? In: Berry DM (ed) *Understanding digital humanities*. Palgrave Macmillan, Hounds mills, pp 191–209
- Doan S, Vo BKH, Collier N (2012) An analysis of Twitter messages in the 2011 Tohoku earthquake. In: Kostkova P, Szomsor M, Fowler D (eds) *eHealth 2011*. Springer, Berlin, pp 58–66
- Gaffney D (2010) #iranElection: quantifying online activism. proceedings of the WebSci10: extending the frontiers of society on-line, 26–27 Apr 2010, Raleigh, NC. Retrieved from <http://journal.webscience.org/295/>
- Golbeck J, Grimes JM, Rogers A (2010) Twitter use by the US Congress. *J Am Soc Inf Sci Technol* 61(8):1612–1621
- Harrington, S., T. Highfield, & A. Bruns. (2013). More than a backchannel: Twitter and television participations. *J Aud Rec Stud*, 10(1), 405–409. Retrieved from http://www.participations.org/Volume_10/Issue_1/30_Harrington_et_al_10.1.pdf
- Highfield T, Harrington S, Bruns A (2013) Twitter as a Technology for Audiencing and Fandom: the #Eurovision phenomenon. *Inform Commun Soc* 16(3):315–339. <https://doi.org/10.1080/1369118X.2012.756053>
- Hughes AL, Palen L (2009) Twitter adoption and use in mass convergence and emergency events. *Int J Emerg Manag* 6(3–4):248–260
- Hughes AL, St Denis LA, Palen L, Anderson KM (2014) Online public communications by police & fire services during the 2012 Hurricane Sandy. In: Proceedings of the 32nd annual ACM conference on human factors in computing systems. ACM, 1505–1514
- Kirkorian R (2014) Twitter #DataGrants selections. Twitter Engineering Blog 17 Apr 2014. Retrieved from <https://blog.twitter.com/2014/twitter-datagrants-selections>
- Larsson AO, Moe H (2011) Studying political microblogging: Twitter users in the 2010 Swedish election campaign. *New Media Soc* 14(5):729–747. <https://doi.org/10.1177/1461444811422894>
- Lotan G, Graeff E, Ananny M, Gaffney D, Pearce I, boyd d (2011) The Arab spring: the revolutions were tweeted: information flows during the 2011 Tunisian and Egyptian revolutions. *Int J Commun* 5:1375–1405
- Lunden I (2015) Twitter cuts off DataSift to step up its own big data business. Techcrunch 11 Apr 2015. Retrieved from <http://techcrunch.com/2015/04/11/twitter-cuts-off-datasift-to-step-up-its-own-b2b-big-data-analytics-business>
- Manovich L (2012) Trending: the promises and the challenges of big social data. In: Gold MK (ed) *Debates in the digital humanities*. University of Minnesota Press, Minneapolis, pp 460–475
- Mendoza M, Poblete B, Castillo C (2010) Twitter under crisis: can we trust what we RT? Paper presented at the 1st workshop on Social Media Analytics (SOMA ‘10). ACM, Washington, DC

- Meraz S, Papacharissi Z (2013) Networked gatekeeping and networked framing on #Egypt. *Int J Press Polit* 18(2):138–166. <https://doi.org/10.1177/194016121247447>
- Mourtada R, Salem F (2011) Civil movements: the impact of Facebook and Twitter. *Arab Social Media Report*, 1(2). Retrieved from http://www.dsg.ae/En/Publication/Pdf_En/DSG_Arab_Social_Media_Report_No_2.pdf
- Palen L, Starbird K, Vieweg S, Hughes A (2010) Twitter-based information distribution during the 2009 Red River Valley flood threat. *Bull Am Soc Inf Sci Technol* 36(5):13–17
- Puschmann C, Burgess J (2014) The politics of Twitter data. In: Weller K et al (eds) Twitter and society. Peter Lang, New York, pp 43–54
- Rogers R (2009) The end of the virtual: digital methods. Vossiuspers UvA, Amsterdam. Retrieved from http://www.govcom.org/publications/full_list/oratie_Rogers_2009_preprint.pdf
- Rogers R, Jansen F, Stevenson M, Weltevrede E (2009) Mapping democracy. Paper presented at Global Information Society Watch 2009, Association for Progressive Communications and Hivos. Retrieved from <http://www.giswatch.org/sites/default/files/mappingdemocracy.pdf>
- Sarcevic A, Palen L, White J, Starbird K, Bagdouri M, Anderson K (2012) ‘Beacons of hope’ in decentralized coordination: learning from on-the-ground medical twitterers during the 2010 Haiti earthquake. Retrieved from http://www.cs.colorado.edu/~palen/Home/Crisis_Informat_ics_files/Sarcevic-et-al-HaitiMedicalTwitterers.pdf
- Silicon Graphics (2015) Global Twitter heartbeat. Retrieved from <http://www.sgi.com/go/twitter/>
- Twitter, Inc (2015) About Twitter, Inc. Retrieved from <https://about.twitter.com/company>
- Vergeer M, Hermans L (2013) Campaigning on Twitter: microblogging and online social networking as campaign tools in the 2010 general elections in the Netherlands. *J Comput-Mediat Commun* 18(4):399–419



[Dis]connected Households: Transnational Family Life in the Age of Mobile Internet

6

Earvin Charles Cabalquinto

Contents

Introduction	84
The Face of the Filipino Household in a Neoliberal Society	86
Transnational Continuities and Ruptures Through Mobile Connectivity	88
Methods of Investigation	90
Moving in/Through Mobile Media	91
Affective Surveillance	94
Tactical Connectivity	96
Concluding Thoughts: A Boon or Bane?	99
References	100

Abstract

Rapid technological innovations have revolutionized the ways in which Internet connectivity is utilized by individual users across diverse contexts. On a more specific note, the integration of the mobile Internet into a transnational household reproduces new textures and processes in sustaining familial linkages. This chapter illuminates how 21 Overseas Filipino Workers (OFWs) in Melbourne, Australia, and their left-behind family members use Internet-powered mobile devices and networked communications platforms in forging and maintaining family life at a distance. It deploys the theory of mediated mobilities (Keightley and Reading, 2014) to examine how technologically mediated mobilities are engendered and undermined by structural and infrastructural forces. Drawing upon in-depth interviews, visual methods, and field note-taking, the study reveals how ubiquitous smartphones and online platforms mobilize the performance of gendered and familial roles, as well as affective surveillance. Furthermore, tactical connectivity is deployed through personalized strategies in overcoming

E. C. Cabalquinto (✉)

School of Communication and Creative Arts, Deakin University, Geelong, VIC, Australia
e-mail: earvin.cabalquinto@deakin.edu.au

structural and infrastructural barriers. Ultimately, the study approaches the domestication of the mobile Internet as part of a broader social context, such as the operations of a billion-dollar industry of Philippine migration. Paradoxically, Internet connectivity fuels transnational family life as well as legitimizes the retention of structural systems that produce family separation in a globalized economy. It is then by exposing the contradictory mobile experiences embodied and negotiated by transnational family members that this chapter offers a critical lens in critiquing the valorization of migration as a nationalist act in Philippine context.

Keywords

Transnational family · Smartphones · Skype · Messaging application · Mobile Internet · Ubiquitous computing · Tactical connectivity

Introduction

The International Telecommunication Union (ITU) reported that there were 3.6 billion Internet users in 2017 (ITU 2017). It is through such widespread uptake of the Internet that contemporary life has been transformed into a networked, mediated, and mobile landscape. In his book entitled *The Rise of the Network Society*, communication scholar Castells (2001) articulates the ways in which the Internet has increasingly permeated every aspect of an individual's personal and social life. Coining the term "network society," Castells (2001) illuminates how Internet systems and infrastructures have revolutionized the operations of personal, social, economic, and political terrains at a local, transnational, and global context. In this vein, non-proximate individuals sustain interactions and relationships at a distance by utilizing computer networks, digital information, and networked systems (Haythornthwaite 2005), which in the context of family life Bakardjieva (2003) refers to as a form of "virtual togetherness." In migration studies, globalization scholar Appadurai (1996) has emphasized how information communication technologies have become a transformative and indispensable tool in maintaining diasporic links. He specifically highlights how the flows of media information through communication technologies facilitate the reterritorialization of locality, which therefore contributes to the imagination and embodiment of the homeland. In this case, the blurring of boundaries of online and physical environments through Internet media (Miller and Slater 2000) encapsulates space-time distanciation (Giddens 2013) especially among dispersed individuals, families, communities, and institutions.

Recent technological innovations continue to reshape the ways in which Internet connectivity is used and experienced in everyday life. Specifically, the convergence of devices, software systems, Internet connectivity, and network infrastructures (Jenkins 2006), as well as the media industries (Goggin 2011), has been crucial in how digital ties are performed, embodied, and negotiated across time and space (Goggin 2014). This could even be more salient in recent times given the 7.7 billion

mobile-cellular telephone subscriptions in the world in 2017 (ITU 2017). However, moving away from a technological determinist perspective, it is imperative to consider how a wide range of social, economic, and political forces revises and disrupts the widespread uptake of smartphones, social media networks, and mobile applications in the age of ubiquitous computing (Goggin and Hjorth 2009).

This chapter presents a critical investigation of the role of Internet-enabled mobile devices and networked communications platforms in molding the operations of family life at a distance. The study specifically examines how 21 Overseas Filipino Workers (OFWs) in Melbourne, Australia, and their left-behind family members in the Philippines use smartphones, social media platforms, and mobile applications to forge and maintain transnational family life. It approaches mobile practices by locating the different dimensions that influence the often asymmetrical, disrupted, and politicized conditions of the transnational Filipino family. First, the study determines the different affordances of Internet-based apparatuses and channels that impact mediated communication among dispersed family members. Second, it takes into account the diverse and interconnected forces that inform mobile practices. Lastly, it critically assesses the meaning of diverse and personalized mobile practices in relation to the broader contexts and social systems that orchestrate and perpetuate asymmetries in a global and networked economy. Additionally, it exposes the contradictory experiences embodied and the tactical modality deployed by the transnational Filipino family in using digital communication technologies to experience a sense of family. The study is based on data drawn from conducting interviews, visual methods, and field note-taking.

The research project analyzes the embeddedness of Internet-based mobile devices into family life at a distance through a mediated mobilities perspective (Keightley and Reading 2014). It employs such theorization to present Internet connectivity as not only accessed through desktop computers. Rather, it is conceived as mobile and networked (Goggin 2011, 2014) in the age of mobile computing (Greenfield 2006). In this case, the accessibility of Internet connectivity through mobile devices and online platforms signals the mediation of everyday and individual movements and sociality (Goggin 2014). Extending this modality in the context of migration, Internet-based devices and platforms generate a polymedia environment (Madianou and Miller 2012) among migrants and their loved ones. Individuals choose a particular platform based on its social, emotional, and moral consequences, as well as in comparison to the capabilities and limitations of other platforms (Madianou and Miller 2012). While there has been a rich discussion on how a polymedia environment stirs the sustenance of family life at a distance, less focus has been given to how mobility – as an encompassing affordance of devices, Internet connectivity and platforms – influences transnational interactions and relationship building. It is through this point that the study incorporates the theory of mediated mobilities (Keightley and Reading 2014) to rethink the formation of mediated and mobile lives in a digital era. It must also be noted that such theorization invites us to examine technologically mediated mobilities as informed by intersecting forces, including sociocultural, socio-technological, economic, and political (Keightley and Reading 2014).

This study seeks to emphasize a critical analysis of the mobile practices of transnational families. At the core of such take is to unravel the formation of asymmetrical mobile practices. It builds on previous studies that have unearthed the different causes of uneven and often disrupted practices (Lim 2016; Madianou and Miller 2012). More importantly, it analyzes Internet connectivity as part of the broader terrain of structural systems that essentially produces physical separation and virtual connectivity of Filipino family members. Drawing on a growing corpus of work that puts high emphasis on such proposition (Francisco-Menchavez 2018; Francisco 2015; Parreñas 2005), this study attempts to continue the critical conversation by exposing the ruptures and fissures of an interconnected and Internet-dependent household, which are often mended through what I refer to as “tactical connectivity.” This coined term envisages the personalized tactics deployed by members of the transnational Filipino family to save, reclaim, and sustain relationships and linkages. Ultimately, the chapter conveys a nuanced stance on how Internet-powered mobile devices and platforms are enhancing and undermining the everyday lives of those who have been impacted by the uneven consequences of global capitalism. Furthermore, unravelling the conflation of communicative possibilities and perils in digital media use means that family members who have been separated because of distributional politics in a supposedly welfare state are reflected upon as a vantage point to rethinking the processes of building and sustaining a satisfying relationship.

The Face of the Filipino Household in a Neoliberal Society

The Philippines is one of the major sources of human labor across the world. It has been supplying sea-based and land-based workers in different industries and fields in many parts of the world. Referred to as Overseas Filipino Workers (OFWs), they work as nurses, caregivers, teachers, engineers, IT professionals, as well as domestic helpers and entertainers. It must be noted that overseas migration, which has now turned out to be a billion-dollar industry, was initially identified by the Philippine government as a stop-gap measure in the increasing rate of unemployment, under-employment, and poverty in the Philippines (Guevarra 2010; Rodriguez 2010). It has been considered as a strategic move of the Philippines to address the uneven impacts of global capitalism, including the restructuring of the work force, flexibilization of work, and diversification of labor demands across the world. The Philippine's signing of the Washington consensus, which enables deregulation, privatization, and Liberalization, has contributed to the economic instability in the country, as reflected in trade deficit and debts from World Trade, International Monetary Funds (IMF), and private banks and institutions (Aguilar 2014). As a result, during the 1970s, the Philippine government promoted overseas migration as a means for ordinary Filipinos to support their loved ones (Rodriguez 2002, 2010). Overseas employment was then institutionalized when former President Ferdinand Marcos signed the 1974 Labor Code, paving the way for the creation of organizational frameworks and establishment of departments to “manage” the deployment of

Filipino workers overseas (Guevarra 2010; Rodriguez 2010). To date, an estimated number of 2.3 million Filipinos work abroad (POEA 2015).

The birth of the transnational Filipino family is a clear evidence of the realization of a neoliberal state. By implementing neoliberal policies, the Philippine government, with its affiliated networks, agencies, and institutions, has built an industry out of family separation through discursive practices. Rodriguez (2010) argues that the Philippine is a labor brokerage state that successfully operates through a transnationally coordinated mechanism. The exportation of human labor is fueled by marketing strategies and practices among involved agencies and government departments. Filipinos, who may end up in vulnerable occupations, receive training and certifications to be marketable overseas (Guevarra 2010; Rodriguez 2010). Complementing the work of Rodriguez (2010) is the rearticulation of labor brokerage by Guevarra (2010). Guevarra (2010) argues that Filipino workers are conditioned to embody a certain subjectivity – educated, English-speaking, God-fearing, self-sacrificing, and hardworking. Further, Filipino women are manufactured as naturally caring and submissive, which characteristics suite the standards of foreign employers. Guevarra (2010) also emphasizes that such construction of an ideal overseas Filipino worker is legitimized by positive branding. OFWs are then recognized for their hardwork, dedication, and sacrifice by calling them modern-day heroes of the Philippines. In here, the individual is conditioned to embody an independent and entrepreneurial subjectivity, which absolves the Philippine government from its responsibility to provide viable livelihood, social welfare system, and public services to its citizens (Rodriguez 2010). Notably, from being a temporary solution to economic instability, migration has become an institutionalized modality of the Philippines to deal with the demands, pressures, and structures of a global society. The brokerage of cheap and feminized labor (Parreñas 2001b) remains at an unprecedented rate because the flow of remittances keeps the Philippine economy afloat. According to the Bangko Sentral ng Pilipinas (Philippine Central Bank), the amount of cash sent home by Filipinos abroad was 2.47 billion dollars in May 2018 (Lopez 2018). In 2017, the full-year cash remittances of 28.1 billion dollars accounted for 10% of the Philippines' gross domestic product (GDP) (Cuaresma 2018).

A neoliberal state continues to control and shape transnational family life. First, the self-responsibilization of diverse needs is articulated through the positioning of migration as a heroic act (Rodriguez 2010). It is through this point that the embodiment of being a responsible member of the family and nation is branded as a form of nationalism based on gestures of money transfers, the circulation of material goods, as well as creating income-generating projects. Second, the Philippine government, through its pre-departure briefing, promotes the use of mobile devices and networked platforms among overseas migrants in sustaining family relationships (Madianou 2016b). Multiple kiosks selling mobile phone packages among migrating Filipinos populate Philippine airports. However, it is worth noting that services and packages on mobile communication in the Philippines remain in the hands of private companies and foreign investors. Telecommunication companies in the Philippines, such as PLDT, SMART, and Globe Telecom, are private companies (Mendes et al.

2007). Historically, it was when former President Fidel Ramos introduced the Executive Order 109, the Public Telecommunications Policy Act in 1993, that paved the way for the liberalization of the country's telecommunications system (Pertierra et al. 2002). Notably, the uptake of mobile phones is compelled by the cost or a lack of adequate telephone services in the Philippines (Pertierra et al. 2002).

In the past, the Filipinos' uptake of mobile phones made the Philippines as the "texting capital of the world" (Pertierra et al. 2002) as well as the "social networking capital of the world," with a 93.9% of Facebook online penetration rate and 16.1% Twitter penetration rate in 2011 (Stockdale and McIntyre 2011). More recently, according to the International Telecommunication Union (ITU), there were more than 115 million mobile-cellular telephone subscriptions in the Philippines (ITU 2016). In relation to practices, in a recent report released by social management platform Hootsuite and We Are Social, Filipinos have been identified as the world's heaviest Internet users, spending an average time of 10 h and 2 min in using the Internet (Mabasa and Miraflor 2019). Filipinos also spend 4 h and 58 min in using mobile Internet (Mabasa and Miraflor 2019). Nevertheless, as to be presented in this chapter, the intersections of social, economic, political, and technological forces shape the quality of relationship among the transnational Filipino family.

Transnational Continuities and Ruptures Through Mobile Connectivity

From its inception as a tool for military purposes (Holmes 2005), the Internet has essentially evolved into one of the most powerful connective tools in our society. It has not only provided connections among government institutions and commercial enterprises (Holmes 2005). But, it has also turned into an indispensable tool in our everyday life. As communication scholar Castells (2001) emphasizes, the Internet, alongside diverse media forms and networked infrastructures, has permeated and reconfigured personal, social, economic, and political life. He even introduced the term "network society" to articulate the transformations enabled by the increased use of Internet connectivity in various contexts (Castells 2001). With Internet connection and appropriate communicative devices, individuals located across places are able to exchange information and forge connections (Wellman and Haythornthwaite 2002). In the context of a household, the Internet provides the links that sustain familial relations. "Virtual togetherness" is afforded among members of a household (Bakardjieva 2003).

Recent technological advancements continue to shape the ways in which Internet connectivity impacts contemporary life. One evident change that reshapes Internet access and use is the emergence of a convergence culture where old and new media collide (Jenkins 2006). The Internet is no longer solely accessed via sedentary devices. The advent of what Goggin (2011) calls "global mobile media" shows the popularity of mobile Internet. Internet connectivity has become an integral functionality of mobile devices, such as smartphones, laptops, and tablet computers. Moreover, it has fueled the production and distribution of personalized content through

the accessibility of entertainment and creative platforms, such as social networking sites, mobile games, mobile music, and so forth (Goggin 2011). The Internet, accessible through portable and global platforms, paves the way for mobile social computing (Goggin 2012a). Everyday activities are enabled, mediated, and even constrained through mobile connectivity and mobile applications (Goggin 2012b; Hjorth et al. 2012). Furthermore, the use of Internet-enabled mobile technologies indicates personalized, gendered, and localized practices (Hjorth 2009) stirring a sense of copresence (Hjorth 2011; Richardson and Wilken 2012). Significantly, domesticity is also reshaped by the mobile Internet. Mothering at a distance is performed through communicative technologies (Dobashi 2005; Matsuda 2009), and children feel a sense of assurance with constant communication with their parents (Hjorth 2012b).

This paper reflects on the ways in which the transnational Filipino family utilizes Internet-powered mobile devices and platforms to maintain “shared imaginary of ‘belonging’ which transcends particular periods and places to encompass past trajectories and future continuities” (Yeoh et al. 2005). Previous studies have shown the pivotal role of mobile devices and networked communications platforms in sustaining long-distance relationships (Cabañas and Acedera 2012; Medianou and Miller 2012; Parreñas 2005; Uy-tioco 2007). For instance, mobile communication enables the performance of mothering (Parreñas 2001a) and fathering (Parreñas 2008) from afar. Significantly, transnational family members reactivate relationships in a polymedia environment (Medianou and Miller 2012). In such a networked hub, individuals choose a particular platform in relation to the affordances of other platforms, as well as in considering the moral, social, and economic consequences of platform use (Medianou and Miller 2013). Ultimately, one must have access, financial capacity, and literacy to enter and thrive in a digitally connected space (Medianou and Miller 2012).

The study deploys the theory of mediated mobilities (Keightley and Reading 2014) to examine how Internet-enabled devices and channels inform family life from afar. Such theorization allows the study to not only identify the outcomes of mobile practices in a networked environment (Medianou and Miller 2012). It also presents a new approach in investigating mediated practices across various contexts by putting high emphasis on the different factors that engender and undermine digital media use. According to Keightley and Reading (2014), mediated mobilities or the use of a wide range of media channels is often shaped by social, political, and economic forces. For instance, communicative practices are linked to the reinforcement of power relations and control in society as reflected in surveillance modalities (Keightley and Reading 2014). Reflecting on such example, the study refers to previous studies in mobile communication that have unpacked how digital routines are shaped by hierarchical and stifling gender norms (Cabañas and Acedera 2012; Parreñas 2001a, 2008; Uy-tioco 2007).

On a broader context, mobile communication serves as a discursive practice that reinforces neoliberal policies and practices. As presented earlier, the separation of Filipino family members contributes to the steady operation of the Philippine migration industry. For instance, mobile device use enables the flows of remittances

(Parreñas 2001a; Uy-tioco 2007) that keep the national economy afloat. As noted by Francisco-Menchavez (2018), household members become the “anchor” in enabling the flows of money, goods, and digital information, which supports familial relations and national economy. The constant flows of items and finances are legitimized by framing such actions as a nationalist act (Rodriguez 2010) and reflect the embodiment of an ideal citizen – self-motivated, entrepreneurial, and hardworking (Guevarra 2010). Unfortunately, the self-responsibilization of social welfare needs may absolve the government from its duties to support its people (Rodriguez 2010). One may see such aspect in the ways in which Filipino migrants opt to endure unstable and costly communication as a result of being provided with unreliable technological infrastructures in the homeland (Madianou and Miller 2012; Parreñas 2005). By taking into account the intersecting forces that produce asymmetrical mobile experiences (Lim 2016; Madianou and Miller 2012), this chapter articulates a critical stance on how mobilities enabled by mobile Internet may foster and deter the formation of a digitally mediated household.

Methods of Investigation

The data presented in this chapter is obtained by involving 21 Overseas Filipino Workers (OFWs) in Melbourne, Australia, and their left-behind family members in the Philippines. Twelve OFWs were interviewed in Melbourne from December 2013 to April 2014. Nine left-behind family members were also interviewed in the Philippines from May to June 2014. Two Philippine-based participants and one Singapore-based research participant opted to be interviewed via overseas call. Informants’ age ranged from 26 to 74 years old. Levels of education ranged from high school, technical/vocational, and postgraduate qualifications. Majority had jobs except for one informant that was based in the Philippines. It must be noted that OFWs in Australia are holders of Subclass Visa 457 holders or Temporary Work (Skilled) Visa holders. These individuals, as well as their loved ones, often have limited access to social welfare benefits provided by the Australian government to permanent residents and citizens (Larsen 2013). As a result, Subclass Visa 457 holders often leave their loved ones behind. Their plan is to apply and obtain permanent residency and eventually bring their loved ones to Australia. With physical separation to deal with, they use mobile devices and networked platforms.

The data were drawn from conducting in-depth interviews (Creswell 2013; Lindlof and Taylor 2002), photo elicitation, photo documentation (Emmison and Smith 2000), and field note-taking (Creswell 2013). The interviews unpacked the motivations and impacts of mobile device use among the informants. By taking into consideration the presence and use of visual-based platforms, the informants were asked to provide photos stored onto their mobile phones. Further, the informants’ mobile practices were captured through a camera as part of photo documentation. The photographs were used as prompts for the informants’ reflections on their mobile practices in sustaining family life at a distance. The interviews lasted between 45 min and over an hour. The interview sessions were tape-recorded, transcribed

verbatim, coded, and analyzed. The interview responses were mostly in *Tagalog* and *Taglish* (Tagalog-English). Photographs were also coded and analyzed. To protect the privacy of the informants, pseudonyms were used and faces on images were imaged. Meanwhile, field notes were used to identify and articulate the nuances in mobile practices and experiences by the informants. In sum, included in this chapter are the translated quotations.

Moving in/Through Mobile Media

In his book *Home Territories: Media, Mobility, and Identity*, David Morley (2000) emphasizes that the use of mobile phones among family members has led to the “dislocation of domesticity.” He argues that digital communication technologies allow “individuals (and sometimes whole families or communities) to escape, at least imaginatively from their locations” (Morley 2000, pp. 149–150). Echoing this proposition is the contention of Hjorth (2012a), suggesting that the mobile phone can be likened to a miniature caravan that symbolizes the intersections of personal and family life. A sense of home, mediated by a mobile device, is no longer contained in one locality or place, but rather embodied through practices or memory making (Hjorth 2012a). These articulations primarily speak volume about the mobilities enabled by mobile devices and networked platforms. In the age of the smartphone, family life has been transformed into a networked, a mobile, and an always-on arrangement. Importantly, familial relations are colonized by mobile media, Internet connectivity, digital information, and networked infrastructures.

During my fieldwork, majority of the informants owned a smartphone. Some of them even owned another smartphone, a tablet, and a laptop. My informants in Melbourne obtained their smartphones through a postpaid plan. These plans committed them for a monthly expenditure for a period of 12–24 months with a specified volume of data per month. They used mobile data to access the Internet and various mobile applications, except for one participant who was unfamiliar with the use of mobile Internet. Importantly, overseas migrants considered Internet use as a relatively cheaper means to maintain familial connection. In here, the use of messaging applications and social media does not take up mobile data. However, this is not the case for those who use videoconferencing through their smartphones while on the move. For instance, Efren, a chef in Melbourne, and a father of four children in the Philippines, shared his experiences in using his smartphone. He considers his mobile data as “bitin” (not enough) despite having access to a 3 gigabyte (GB) data allowance:

Whenever I initiate a long-distance call (*often videoconferencing*), of course, I don’t see them often (*referring to his brother*), and it’s been a while since I talked to them. Suddenly I will receive a message saying, “You reached 50 per cent of your mobile data.”

Back in the Philippines, left-behind family members also use a smartphone. The device is often a secondhand phone received from an overseas loved one or given as

a gift. Culturally, giving presents highlights the acceptance of status differentials or the recognition of mutual understanding between the giver and the receiver (Berg et al. 2005; Perttierra 2006). Additionally, such practice of sending old devices or giving a phone as a gift presents the value placed in maintaining familial relation, often complementing the role of money transfers in strengthening emotional ties (McKay 2007; Parreñas 2005). On a practical level, transnational family members appreciate the cheaper costs of using Internet-enabled platforms instead of using regular text messaging or overseas call. As one of the informants from the Philippines said, “If you have unlimited Internet and the other person has an Internet connection as well then it’s cheaper!”

The embeddedness of Internet-enabled mobile phones and platforms into transnational family has enabled separated family members to remain involved in daily familial activities despite separation. Flow of texts, images, sound bites, and multimedia content through a messaging application triggers a sense of copresence (Cabalquinto 2018a; Hjorth 2015). For instance, Benjie, a 53-year-old church worker, talked about his experiences. Benjie has a close relationship with his daughter. On a daily basis, his daughter would send him random messages, including a combination of emoticons and a short voice recording, with the words, “I love you” (see Fig. 1). On some occasions, his daughter also reports to him about a sibling who occasionally does not come home after a night out (see Fig. 1). This message then prompts him to call his son, clarify the situation, and provide advice. In this vein, an Internet-based platform serves as an important tool in establishing

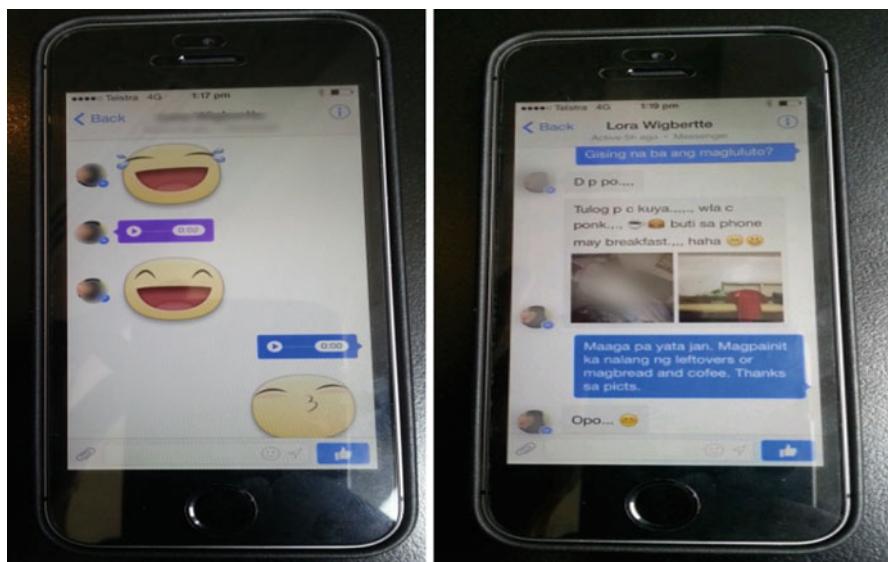


Fig. 1 A screenshot of the exchanges between Benjie and his daughter. (Published with permission)

intimate familial connections as well as allowing overseas loved ones to stay involved in the daily life of those who are left back home (Chib et al. 2014; Madianou and Miller 2012).

One of the salient findings of the study is that sociocultural forces – familial and gender values – inform the use of digital communication technologies. For instance, a Skype session reinforces the provider role of the father in Philippine society (Aguilar et al. 2009; Parreñas 2008). An example of this is when Efren once drove through Melbourne in his car while Skyping with his children and a sibling back home. Although it is illegal to Skype while driving in Melbourne, he took the risk and presented to his family a glimpse of life in Melbourne:

Efren: They said (*referring to his children on Skype*), “Wow! Life is very different there!” I said, of course, I worked hard for it. I told them that what they see (*the car*) are the basic needs here.

Interviewer: How does it feel when you can see each other while you’re driving?

Efren: I’m proud. And they’re proud of me because they expect that “Pa, when we get there, there’s a car that we can ride in! There’s no more *Jeepney*.”

The literature on mobile communication in the context of Philippine migration has focused on migrant mothering caring for their left-behind family members (Fresnoza-Flot 2009; Madianou and Miller 2012; Parreñas 2001b; Tacoli 1993). This study, however, discovered that remote mothering (Rakow and Navarro 1993) can be performed from the homeland. Left-behind mothers of migrants use digital devices to deliver care, love, and support through mobile devices. However, it is the migrant child who often initiates the contact because of time differences. For example, Jeff, a registered nurse in Melbourne, called his mother Dolor, a 51-year-old housewife, to ask about instructions for how to cook a Filipino dish called *Tokwa’t Baboy* (Tofu and Pork):

Jeff: I like cooking. So if I want to taste a food from the Philippines, either I call my mother or I check YouTube. Over the phone she will tell me the steps on how to cook it.

Interviewer: So how does it feel as your mother gives instructions?

Jeff: It seems she’s beside me. Actually, I call her before I start cooking. I ask her first the list of ingredients and the process. The dish cooked by my parents is different from YouTube. Of course I miss the dish cooked by my mother. I want my food to be prepared the way my mother does.

Through the mobile device, Jeff and his mother convened and were able to detail the domestic and personalized instructions. On one hand, the conversation enables Jeff to generate an imagined copresence with his mother in preparing a similar dish back home. On the other hand, the ritualistic engagement between Jeff and his mother reinstates gendered roles. By making his mother involved in his everyday life, he observes “filial piety” or act to show love and respect for one’s parents (Cabralquinto 2018b). Meanwhile, his mother, giving him instructions, demonstrates how left-behind mothers can become mothers again (Madianou 2012). During my interview with Dolor, intimate moments of care expression were recalled.

Dolor: It was raining then when he called, he said, “Ma, it’s raining over here.” I said, look after yourself as you walk. He said, “I know that, Ma!” Then I replied, “Put a cloth on your back. Don’t let your sweat dry on your back so you won’t get sick.”

Interviewer: So how does it feel as a mother that you’re away from your child?

Dolor: He didn’t deny me my right as a mother. As long as I am alive he will always be in my heart, I said to him.

Affective Surveillance

Mobile devices can act as a form of personalized “wireless leash” (Qui 2007) in sustaining transnational relationships. This is not surprising given the attachment of the mobile device to the body, placing individuals in an always-on connectivity (boyd 2011). In here, non-proximate family members can communicate in synchronous and asynchronous modality through a wide range of media contents, including texts, photographs, audio bites, and multimedia content. Notably, keeping track of family members’ activities or movements through mobile devices are essentially practiced by overseas migrants, such as migrant mothers (Cabañas and Acedera 2012; Madianou and Miller 2012; Perttierra et al. 2002) or migrant fathers (Mckay 2015; Parreñas 2008). For example, OFWs monitor how their hard-earned money is spent by their left-behind loves ones through constant communication (Chib et al. 2014; Madianou and Miller 2012; Uy-tioco 2007). In the age of mobile social media, digital traces are used to monitor spending and generate trust. Such modality in transnational family life is termed “affective surveillance” by sociologist Francisco-Menchavez (2018). Too often, migrant workers check status updates, photos, and videos of their loved ones who are recipients of their remittances and sent packages (Francisco-Menchavez 2018).

This study shows that single and professional migrants who assume a breadwinner role in the family use mobile devices and online platforms to perform affective surveillance. An example of this is Rachelle, a 28-year-old Sales Manager in Melbourne, who sends money back home regularly to support her mother and six siblings. Rachelle shared during the interview that a family group chat in a messaging application serves as a portal to address and keep track of family needs and requests. Rachelle and her two siblings in Melbourne use the messaging application to ensure that the money transferred is spent wisely. As she highlighted, “We send money. With iMessage they tell me what they’re spending on.” She also elaborated on her experiences in using a messaging application to build trust among her left-behind siblings. One time, she received a message from her siblings back home asking for money to spend on a prom dress. To ensure that the money that she sent went to purchasing the dress, she asked her siblings to take a photo of the outfit and send the photo via the group chat. Rachelle’s siblings did took a photo of the dress, even worn by them (see Fig. 2).

The exchanges of visuals through a messaging application present how proper spending of remittances is validated. Importantly, complementing the work by Francisco-Menchavez (2018), a migrant’s expression of care through money transfer is reciprocated with non-monetary forms of care, such as valuing remittances

Fig. 2 A photo of a purchased prom dress.
(Published with permission)



through proper purchases. It must be noted that migrant Filipinos consider money transfer as an investment in sustaining relations, as well as to ensure support from loved ones during old age (McKay 2007).

The research study also engages with the left-behind loved one of Rachelle to unravel attitudes toward practices of affective surveillance. Ken, a 28-year-old law graduate, mentioned that he does not consider the exchanges of information through a group chat as a form of surveillance. Rather, he interprets such mediated practice as an opportunity to express affection and care. Such point reflects in his shared story, “Sometimes I would send a photo with an accompanying text, ‘How I wish you’re here!’ I tell them what we’re doing. They’ll also reply with a photo displaying what they’re doing. But sometimes I would take a photo of my siblings. I would send the photo to them with a text, ‘Christoph is not studying. He just keeps on playing!’ My sister would eventually call Christoph and they will tell him, ‘You should be studying!’ For Ken, the moment is understood as siblings just having a good time.

It must be noted that the type of relationship between family members shapes the texture of mobile exchanges (Miller 2009). It is through this aspect of familial communication that positive affective experiences overshadow negative and sour instances. However, some of my informants felt overwhelmed with their loved one’s monitoring especially when relationships are layered with doubts. This was the case of Roel, a 47-year-old panel beater in Melbourne, who talked about his experiences with his left-behind wife in the Philippines. During the interview, Roel disclosed

how everyday use of Skype has become an integral part of his routine in sustaining a long-distance relationship with his wife and three children in the Philippines. It is automatic for him to use Skype every night to touch base with his left-behind family members. Notably, it is also through Skyping that trust is forged between him and his left-behind wife. During the interview, he also shared that his wife uses Skype to make sure that he is not a womanizer. He confessed that such doubts began when he left for overseas work. Being accused of having an affair, Roel shared how he handled the situation:

I am honest. I told her that I won't womanise. I told her that I am not like that. Given my age and having three children, how can I do that to her? I have been working abroad for a long time already. Why would I do such act? I said that to her.

Apart from the conversation, one of the ways through which Roel earn his wife's trust is by not missing a Skype session every night. His usual routine after work is to switch on Skype and contact his wife. However, he said that his wife can be demanding at times and he has no choice but to follow. In his words, "If she said that I go online at this time, and I didn't go online, she starts having doubts. Sometimes I would just go online even though I just came from work and I have not changed my work clothes yet. If she sets a particular time, and I haven't logged in for the past 30 minutes that she's already online, then she'll go offline. She will get mad at me." As result, Roel never misses going online at a time scheduled by his wife to avoid misunderstanding and a fight.

In summary, networked platforms can mediate interactions as well as forge deep trust. As informed by the quality of familial relations, mobile device use can trigger negative experiences. As reflected in the experience of Roel, constant communication does not only become a fundamental part of fulfilling familial obligation. It also produces communicative obstacles (Madianou 2012). In the next section, I present the different tactics deployed by geographically separated family members in juggling the possibilities and tensions of embedding broadband-enabled mobile devices in the conduct of family life at a distance.

Tactical Connectivity

Previous studies have demonstrated that Internet-enabled mobile devices can also stir communicative tensions in the operations of family life a distance (Cabañas and Acedera 2012; Madianou 2012; Madianou and Miller 2012; Parreñas 2005; Uy-tioco 2007; Wilding 2006). One distinct outcome is how transnational family members experience ambivalent feelings toward digital media use (Madianou 2014; Madianou and Miller 2012). In an era of mobile Internet, digital traces deposited and accessed across a wide range of platforms can undermine transnational relationships, such as how personal information in social media platform accidentally reveal about an overseas loved one (Madianou and Miller 2012). To circumvent communicative

tensions, different strategies are deployed by members of the transnational Filipino family, such as hiding and removing online posts (Madianou 2016a).

This study proposes the term “tactical connectivity” to present how dispersed family members constantly manage their emotions, relationships, and familial obligations by deploying diverse and personalized strategies and navigate structural and infrastructural barriers. First, extending the work of Lincoln and Robards (2016b) in the context of transnational family life, the study emphasizes a strategy that involves the removal of digital traces that may disrupt transnational relationships. While the architecture and affordances of broadband-based platforms place individuals in perpetual connectivity (Katz and Aakhus 2002), individuals have to choose carefully and display texts, images, audio sounds, or multimedia contents, which align with familial values and expectations. The act is a form of impression management (Goffman 1959) performed across broadband-, networked-, and visual-based platforms and primarily sustains transnational linkages and relationships.

During the conduct of the research, one of the informants lamented on how Facebook can contribute to the complexity of maintaining transnational relationships. Jeff, a registered nurse in Melbourne, and a homosexual who is not open about his sexuality, uses Facebook to curate his everyday life, as well as sustain relationship with his family back home. However, it is also through Facebook that Jeff's father from Saudi Arabia can discover information about his activities. Jeff's father does not know about his sexuality, which is why he consistently asks him when he will have a girlfriend. Jeff shrugs off the question and reiterates that he has no time yet for such relationship. Out of respect to him, his father stops asking for a period of time. Despite Jeff's image management, platforms such as Facebook can threaten his secrets and may potentially reveal his sexuality to his father. One time, he posted a photo that documented his activity with his boyfriend, posing a problem for him:

Jeff: I posted a sunset photo. I was with my boyfriend. My dad was excluded so he would not see. Then the rest can see it. But when it generated a lot of likes, I hid it in my timeline.

Interviewer: Why?

Jeff: When my former colleagues in the Philippines liked the post, I realised that I am not ready to be open. I hid it immediately.

In Jeff's case, the presence of online networks on Facebook can become a threat to his personal life. Although he plans to tell his father about his sexuality, he was not ready to do so at the time he posted the photos. As such, he hid the image and from then became careful in posting images that might reveal his sexuality. Examining the experience of Jeff, one may observe that Facebook's architecture allows the publicness of private and personal information (Papacharissi 2009). Personal stories, images, videos, and multimedia content can be accessed and interpreted by different individuals in a platform (boyd 2014). Indeed, the accessibility of circulating digital information thus poses tensions especially when misinterpreted by individuals in an online network (boyd 2014). It is then through editing practices that individual and authentic expressions of feelings and identity can be sustained (Lincoln and Robards 2016a).

Impression management does not only happen through social media. This modality can also be operationalized through video-based platforms, such as Skype. Going back to Roel's case, the visual affordance of an Internet-based platform can function as a wireless leash. For instance, one time, Roel was in his friend's place when his wife messaged him asking if he is already home. Realizing that his wife will get mad if she finds out that he is not home yet, he found a way to address the situation:

Roel: She doesn't like phone calls because, for example, I am here (*a friend's place*), then I will say to her that I'm home (*his place and not his friends*). She will ask, are you sure you are there? (*referring to Roel's own place*), then she will ask me to drop the call and go online on Skype.

Interviewer: So, what do you do?

Roel: I run home so she can see me on Skype and to show her that I am in my own place.

Interviewer: So, you can't lie to her?

Roel: I already lied to her.

Interviewer: So, you just ran home?

Roel: Yes. I am already used to our arrangement.

Tactical connectivity also involves navigating infrastructural barriers. This includes finding alternative and cheaper connection options. An example here is Cherry, a 45-year-old former accountant and now a housewife with two children, aged 8 and 14 years. Cherry received an iPhone 5 from Joey, her husband in Melbourne. It was the intention of Joey to send her an iPhone so they can communicate via Facetime. Unfortunately, Cherry does not know how to use Facetime. Instead, they use Skype and sometimes Viber. Up until now, Joey still pays for the cost of the mobile phone, but not the cost of the subscription. Out of her frustration with the slow and pricey broadband connection in the Philippines, Cherry opted for a cheaper, fast and mobile way to connect. She purchased a pocket Wi-Fi service on a prepaid plan, which she uses at home or sometimes when she is in public.

I have a plan but the services are not good. So I opted for prepaid, 120 pesos (AUD\$3.56) every three days. It's unli (*unlimited*). Before, I pay 999 pesos (AUD\$29.67). Then every time there's a problem, I need to register. Eventually, I feel stressed whenever they tell me the problem. I get a lot of stress from that. So I decided to stop using the plan. With the prepaid, I pay upfront. Unlike this (*the plan*), it's a debt to pay. They (*referring to the provider*) will make your life difficult.

A recent report has shown that the Internet speed in the Philippines is slow compared to countries across the world. According to Ookla's Speedtest Global Index, the Philippines has a mobile Internet speed of 13.37 and a fixed Internet speed of 17.32 in 2018 (Chin 2018). Given such technological landscape, some of the informants spoke about their strategies in maintaining transnational connection. Some opt to use other platforms. Some do not care about how much one has to spend in order to stay connected.

Sometimes the connection is slow, I couldn't use Viber. Sometimes iMessage does not work properly. It couldn't deliver messages. But on Facebook I can send messages. I think it

requires lesser Internet speed. If other platforms do not work, I can use Facebook (Ken, brother of three overseas Filipinos)

Mobile device use is very important. 100% important. That's the way we can only talk with each other. Sometimes there's a problem to address or I want to talk to them, even if it's costly, I just want to speak to them (Yvette, mother of two overseas Filipinos)

The practices of Ken and Yvette present self-responsibilization. They have to find different ways to deal with unstable Internet connectivity as informed by the broader technological asymmetry between Australia and the Philippines. Ironically, private telecommunication companies benefit from such process. Transnational family members are left with no choice but to consume and deal with unstable connectivity in order to embody a sense of family.

Concluding Thoughts: A Boon or Bane?

Technological innovations have brought positive benefits for the transnational Filipino family. The intertwining of mobile devices, portable platforms, Internet connectivity, and networked infrastructures has enabled geographically separated family members to remain deeply involved in each other's daily life. Random content can be exchanged, while relatively cheaper conversations are experienced. Further, moving in/through mobile media has allowed individual users to restage gender and familial roles. In some cases, expressions of affection contribute to amplifying a sense of togetherness among transnational family members. Yet, transnational connections, shaped by diverse forces, can also pave the way for communicative tensions. In here, forms of disruptive affective surveillance are developed. Given the existence of structural and infrastructural barriers, members of the transnational Filipino family deploy tactical connectivity. These strategies allow them to negotiate the ideals, expectations, and values of familyhood as entangled with the conditions of the nation-state.

This chapter points out that mobile Internet, if linked to broader social systems and structures, can be understood as a double-edge sword. Certainly, it offers new and diverse ways of binding family members fragmented by migration as a result of the restructuring of labor markets and organization of work across the globe. Yet, its integration into the transnational Filipino household also enables hierarchical systems and discursive practices to thrive. In here, mobile connections contribute to the self-responsibilization of services that are supposed to be provided by the nation-state. This includes finding many ways to support one's loved ones back home through practical and emotional support. Ultimately, it is thus very important to expose disruptive and asymmetrical experiences in a neoliberal economy to ensure that certain actions are made to address the needs of those who have been disenfranchised in the expansion of global markets. It is through such exposition that one can push for the government to create viable jobs, an accessible social welfare system, and public services for its people. In this way, a satisfying

relationship can be achieved without the need to opt for physical separation and virtual togetherness. More importantly, in the information age, stable and cost-effective technological infrastructures should be built and made accessible. In conclusion, one has to critically reflect upon the role and impacts of mobile connectivity in the conduct family life at a distance given the uneven distribution of resources in a digital and globalized era. It is through this lens that networks, systems, and infrastructures can be harnessed and deployed toward enabling a progressive and equitable society.

References

- Aguilar F (2014) Migration revolution: Philippine nationhood and class relations in a globalized age. Ateneo de Manila University Press, Quezon City
- Aguilar F, Penalosa J, Liwanag T, Cruz RI, Melendrez J (2009) Maalwang buhay: family, overseas migration, and cultures of relatedness in Barangay Paraiso. Ateneo De Manila University Press, Quezon City
- Appadurai A (1996) Modernity at large: cultural dimensions of globalization. University of Minnesota Press, Minneapolis
- Bakardjieva M (2003) Virtual togetherness: an everyday-life perspective. *Media Cult Soc* 25:291–313
- Berg S, Taylor A, Harper R (2005) Gift of the gab. In: Harper R, Palen L, Taylor A (eds) *The inside text: social, cultural and design perspectives on SMS*. Springer, Dordrecht, pp 271–286
- boyd D (2011) Participating in the always-on lifestyle. In: Mandiberg M (ed) *The social media reader*. New York University Press, New York, pp 71–76
- boyd D (2014) It's complicated: the social lives of networked teens. Yale University Press, New Haven
- Cabalquinto EC (2018a) Home on the move: negotiating differential domesticity in family life at a distance. *Media Cult Soc* 40:795–816. <https://doi.org/10.1177/0163443717737611>
- Cabalquinto EC (2018b) "I have always thought of my family first": an analysis of transnational caregiving among Filipino migrant adult children in Melbourne, Australia. *Int J Commun* 12:4011–4029
- Cabañas J, Acedera K (2012) Of mobile phones and mother-fathers: calls, text messages, and conjugal power relations in mother-away Filipino families. *New Media Soc* 14:916–930. <https://doi.org/10.1177/1461444811435397>
- Castells M (2001) *The rise of the network society*. Blackwell, London
- Chib A, Malik S, Aricat RG, Kadir SZ (2014) Migrant mothering and mobile phones: negotiations of transnational identity. *Mob Media Commun* 2:73–93. <https://doi.org/10.1177/2050157913506007>
- Chin S (2018) Singapore wins Internet speed race. <https://theaseanpost.com/article/singapore-wins-internet-speed-race>. Accessed 1 Feb 2019
- Creswell JW (2013) Qualitative inquiry and research design: choosing among five approaches, 3rd edn. Sage Publications, Thousand Oaks
- Cuaresma B (2018) OFW remittances hit \$28.1 billion in 2017. <https://businessmirror.com.ph/ofw-remittances-hit-28-1-billion-in-2017/>. Accessed Retrieved 23 Oct 2018
- Dobashi S (2005) The gendered use of Ketai in domestic contexts. In: Ito M, Matsuda M, Okabe D (eds) *Personal, portable, pedestrian: mobile phones in Japanese life*. MIT Press, Cambridge, MA, pp 219–236
- Emmison M, Smith P (2000) Researching the visual: images, objects, contexts and interactions in social and cultural inquiry. *Images, objects, contexts and interactions in social and cultural inquiry*. SAGE, London

- Mabasa R, Miraflor M (2019) Filipinos now world's heaviest Internet users. <https://technology.nbc.com/ph/2019/01/31/filipinos-now-worlds-heaviest-internet-users/>. Accessed 1 February 2019
- Francisco V (2015) 'The internet is magic': technology, intimacy and transnational families. *Crit Sociol* 41:173–190. <https://doi.org/10.1177/0896920513484602>
- Francisco-Menchavez V (2018) The labor of care: Filipina migrants and transnational families in the digital age. Marston Book Services Ltd, Oxfordshire
- Fresnoza-Flot A (2009) Migration status and transnational mothering: the case of Filipino migrants in France. *Glob Netw* 9:252–270. <https://doi.org/10.1111/j.1471-0374.2009.00253.x>
- Giddens A (2013) The consequences of modernity. Wiley, Oxford
- Goffman E (1959) The presentation of self in everyday life. Doubleday, New York
- Goggin G (2011) Global mobile media. Routledge, Abingdon
- Goggin G (2012a) Google phone rising: the android and the politics of open source. *J Media Cult Stud* 26:741–752. <https://doi.org/10.1080/10304312.2012.706462>
- Goggin G (2012b) The iPhone and communication. In: Hjorth L, Burgess J, Richardson I (eds) *Studying mobile media: cultural technologies, mobile communication, and the iPhone*. Routledge, New York, pp 11–27
- Goggin G (2014) Mobile web 2.0, new imaginaries of mobile Internet. In: Herman A, Hadlaw J, Swiss T (eds) *Theories of the mobile internet: materialities and imaginaries*. Routledge, New York
- Goggin G, Hjorth L (2009) The question of mobile media. In: Goggin G, Hjorth L (eds) *Mobile technologies: from telecommunications to media*. Routledge, New York, pp 21–32
- Greenfield A (2006) Everywhere: the dawning age of ubiquitous computing. New Riders, Berkeley
- Guevarra AR (2010) Marketing dreams, manufacturing heroes: the transnational labor brokering of Filipino workers. Rutgers University Press, New Brunswick
- Haythornthwaite C (2005) Social networks and Internet connectivity effects. *Inf Commun Soc* 8:125–147. <https://doi.org/10.1080/13691180500146185>
- Hjorth L (2009) Mobile media in the Asia-Pacific: gender and the art of being mobile. Routledge, London
- Hjorth L (2011) It's complicated: a case study of personalisation in an age of social and mobile media. *Comm, Pol & Cul* 44:45–59
- Hjorth L (2012a) iPersonal: a case study of the politics of the personal. In: Hjorth L, Burgess J, Richardson I (eds) *Studying mobile media: cultural technologies, mobile communication, and the iPhone*. Routledge, New York, pp 190–212
- Hjorth L (2012b) Still Mobile, a case study of mobility, home and being away in Shanghai. In: Wilken R, Goggin G (eds) *Mobile technology and place*. Routledge, New York, pp 140–156
- Hjorth L (2015) Intimate cartographies of the visual: camera phones, locative media and intimacy in Kakao. In: Wilken R, Goggin G (eds) *Locative media*. Routledge, New York, pp 23–38
- Hjorth L, Burgess J, Richardson I (2012) *Studying mobile media: cultural technologies, mobile communication, and the iPhone*. Routledge, New York
- Holmes D (2005) Communication theory: media, technology, society. SAGE, London
- ITU (2017) ICT facts & figures, the world in 2017. <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>. Accessed 12 January 2019
- ITU (2016) ITU Key 2005 - 2006 ICT Data. <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>. Accessed 12 Mar 2018
- Jenkins H (2006) Convergence culture: where old and new media collide. New York University Press, New York
- Katz J, Aakhus M (2002) Perpetual contact: mobile communication, private talk, public performance. Cambridge University Press, New York
- Keightley E, Reading A (2014) Mediated mobilities. *Media Cult Soc* 36:285–301. <https://doi.org/10.1177/0163443713517731>
- Larsen G (2013) The subclass 457 visa: A quick guide. http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1314/QG/Subclass457Visa. Accessed 20 Jun 2015

- Lim SS (2016) Asymmetries in Asian families's domestication of mobile communication. In: Lim SS (ed) Mobile communication and the family: Asian experiences in technology domestication. Springer, London, pp 1–12
- Lincoln S, Robards B (2016a) Being strategic and taking control: bedrooms, social network sites and the narratives of growing up. *New Media Soc* 18:927–943. <https://doi.org/10.1177/1461444814554065>
- Lincoln S, Robards B (2016b) Editing the project of the self: sustained Facebook use and growing up online. *J Youth Stud* 20:518–531. <https://doi.org/10.1080/13676261.2016.1241869>
- Lindlof TR, Taylor BC (2002) Qualitative communication research methods, 2nd edn. Sage Publications, Thousand Oaks
- Lopez M L (2018) May remittances signal GDP boost. <https://www.bworldonline.com/may-remit-tances-signal-gdp-boost/>. Accessed 23 Oct 2018
- Madianou M (2012) Migration and the accentuated ambivalence of motherhood: the role of ICTs in Filipino transnational families. *Glob Netw* 12:277–295
- Madianou M (2014) Smartphones as polymedia. *J Comput Mediat Commun* 19:1–14. <https://doi-org.ezproxy-f.deakin.edu.au/10.1111/jcc4.12069>
- Madianou M (2016a) Ambient co-presence: transnational family practices in polymedia environments. *Glob Netw* 16:183–201. <https://doi-org.ezproxy-f.deakin.edu.au/10.1111/glob.12105>
- Madianou M (2016b) Polymedia communication among transnational families: what are the long-term consequences for migration. In: Kilkey M, Palenga-Möllenbeck E (eds) Family life in an age of migration and mobility: global perspectives through the life course. Palgrave Macmillan, London, pp 71–93
- Madianou M, Miller D (2012) Migration and new media: transnational families and polymedia. Routledge, Abingdon
- Madianou M, Miller D (2013) Polymedia: towards a new theory of digital media in interpersonal communication. *Int J Cult Stud* 16:169–187. <https://doi.org/10.1177/1367877912452486>
- Matsuda M (2009) Mobile media and the transformation of family. In: Goggin G, Hjorth L (eds) Mobile technologies: from telecommunications to media. Routledge, New York, pp 62–72
- McKay D (2007) 'Sending dollars shows feeling' – emotions and economies in Filipino migration. *Mobilities* 2:175–194. <https://doi.org/10.1080/17450100701381532>
- Mckay S (2015) "So they can remember me when I'm gone": remittances, fatherhood and gender relations of Filipino migrant men. In: Hoang LA, Yeoh BSA (eds) Transnational labour migration, remittances and the changing family in Asia. Palgrave Macmillan, New York, pp 111–134
- Mendes S, Alampay E, Soriano E, Soriano C (2007) The Innovative use of mobile applications in the Philippines - Lessons for Africa. http://siteresources.worldbank.org/EXTDEVELOPMENT/Resources/20071129-Mobiles_PH_Lessons_for_Africa.pdf. Accessed 23 Feb 2013
- Miller D (2009) What is a mobile phone relationship? In: Alampay E (ed) Living the information society in Asia. Institute of Southeast Asian Studies, Singapore, pp 25–35
- Miller D, Slater D (2000) The Internet: an ethnographic approach. Berg, Oxford, UK
- Morley D (2000) Home territories: media, mobility and identity. Routledge, London
- Papacharissi Z (2009) The virtual geographies of social networks: a comparative analysis of Facebook, LinkedIn and ASmallWorld. *New Media & Soc* 11:199–220. <https://doi.org/10.1177/1461444808099577>
- Parreñas RS (2001a) Mothering from a distance: emotions, gender, and intergenerational relations in Filipino transnational families. *Fem Stud* 27:361–390
- Parreñas RS (2001b) Servants of globalization: women, migration and domestic work. Standford University Press, Stanford
- Parreñas RS (2005) Long distance intimacy: class, gender and intergenerational relations between mothers and children in Filipino transnational families. *Glob Netw* 5:317–336
- Parreñas RS (2008) Transnational fathering: gendered conflicts, distant disciplining and emotional gaps. *J Ethn Migr Stud* 34:1057–1072. <https://doi.org/10.1080/13691830802230356>

- Pertierra R (2006) Transforming technologies: altered selves, mobile phone and Internet use in the Philippines. De La Salle University Press, Manila
- Pertierra R, Ugarte E, Pingol A, Hernandez J, Dacanay NL (2002) TXT-ing selves: cellphones and Philippine modernity. De La Salle University Press, Manila
- Philippine Overseas Employment Administration, 2014-2015 Overseas Employment Statistics (2015). <http://www.poea.gov.ph/ofwstat/compendium/2015.pdf>. Accessed 19 Nov 2016
- Qui JL (2007) The wireless leash: mobile messaging service as a means of control. *Int J Commun* 1:74–91
- Rakow LF, Navarro V (1993) Remote mothering and the parallel shift: women meet the cellular telephone. *Crit Stud Mass Commun* 10:144–157. <https://doi.org/10.1080/15295039309366856>
- Richardson I, Wilken R (2012) Parerga of the third screen: mobile media, place and presence. In: Goggin G, Wilken R (eds) Mobile technology and place. Routledge, New York, pp 198–212
- Rodriguez RM (2002) Migrant heroes: nationalism, citizenship and the politics of Filipino migrant labor. *Citizenship Stud* 6:341–356. <https://doi.org/10.1080/136210202200011658>
- Rodriguez RM (2010) Migrants for export: how the Philippine state brokers to the world. The University of Minnesota Press, Minneapolis
- Stockdale C, McIntyre D (2011) The ten nations where Facebook rules the Internet. <http://247wallst.com/technology-3/2011/05/09/the-ten-nations-where-facebook-rules-the-internet/3/>. Accessed 12 Aug 2014
- Tacoli C (1996) Migrating 'For the Sake of the Family'? Gender, life course and infra-household relations among Filipino migrants in Rome. *Philipp Sociol Rev* 44:12–32
- The ten nations where Facebook rules the Internet (2011). <http://247wallst.com/technology-3/2011/05/09/the-ten-nations-where-facebook-rules-the-internet/3/>. Accessed 12 Aug 2014
- Uy-tioco C (2007) Overseas Filipino workers and text messaging: reinventing transnational mothering. *Continuum* 21:253–265. <https://doi.org/10.1080/10304310701269081>
- Wellman B, Haythornthwaite CA (2002) The Internet in everyday life. Blackwell Publishing, Oxford, UK
- Wilding R (2006) 'Virtual' intimacies? Families communicating across transnational contexts. *Glob Netw* 6:125–142. <https://doi.org/10.1111/j.1471-0374.2006.00137.x>
- Yeoh BSA, Huang S, Lam T (2005) Transnationalizing the 'Asian' family: imaginaries, intimacies and strategic intents. *Global Netw* 5:307–315. <https://doi.org/10.1111/j.1471-0374.2005.00121.x>



How Computer Networks Became Social

7

Chris Chesher

Contents

Introduction: Rise of the Networks	106
Social Networking on the Internet Before Social Networking Services	107
Social Network Analysis	109
It's a Smaller World After All: SNA Meets SNS	111
Castells' Network Society	113
Social Networking: Network Society in Miniature	114
Individualized Spaces of Flows	116
Personal Timeless Time	117
Friends in Translation: An ANT Approach to SNSs	118
Facebook as Theatre, Oligopticon, and Panorama	121
Conclusion	122
References	123

Abstract

From the mid-2000s, social networking services (SNSs) exploded in popularity around the world. This growth can partly be attributed to the availability of the broadband internet (technical networks) and partly to a collective desire for connection in human relationships (social networks). But how did computer networks become social? Even before the growth of SNSs, networks were in the popular imagination and in the academic literature. This chapter looks at three ways that networks were conceptualized: social network analysis (SNA), network society (NS), and actor–network theory (ANT). SNS designers were influenced by previously marginal social science approaches that theorized relationships as social networks. In network conceptions of society, complexity and scale emerge from webs of connections. SNSs mediated and captured the wider transformative

C. Chesher (✉)

Department of Media and Communications, University of Sydney, Sydney, Australia
e-mail: chris.chesher@sydney.edu.au

power of social and technical networks. The tradition of SNA maps associations between individuals and groups to reveal how networks help constitute the self and generate wider social patterns. The second approach, associated with Manuel Castells' influential sociological reading of networks, is the theory of the network society, which identifies a global transition from hierarchies and territories to flows across economic and cultural networks. SNSs follow many trends Castells identified – timeless time and spaces of flows. A third influential network tradition that relates to the rise of SNSs is ANT, which emerged from social studies of technology in the 1980s. It critiques the conventional split in social criticism between the technological and the human, insisting that both human and nonhuman actors have agency and form networks of relations. SNSs can best be understood as mixing the agency of technical actors (computers, software, databases, and interfaces) and human actors (designers, users, and “friends”) into sociotechnical networks.

Keywords

Social network analysis · Network society · Actor–network theory · Social networking services · Social media

Introduction: Rise of the Networks

Around the turn of the twenty-first century, there was significant popular and academic interest in networks. Much of this interest was motivated by the massive growth in global *technical* networks such as the internet. But there was also interest in *social* networks – the ties that connected people and the patterns that emerged from these interconnections. The questions became even more complex when social networks came to be mediated by software on technical networks – social networking services, or social media. In this context, a number of disparate intellectual traditions were grappling with the ontological and practical significance of networks. Networks seemed to be everywhere. Social network analysis (SNA), which had been formally modeling social relationships since the 1930s, was rediscovered. Mathematicians took a new interest in network theory, drawing on the availability of “big data” and new methods of modeling. In sociology, Manuel Castells’ theory of the network society (NS) attributed global historical shifts in economy, space, and time to the rise of networks. In science and technology studies, actor–network theory (ANT) examined rearrangements of human and nonhuman actors in sociotechnical networks. While they shared a fascination with networks, these approaches were only weakly connected with one another (Knox et al. 2006), and were largely incompatible. This chapter will examine these traditions, and the value and limitations of each for understanding the emergence of social networking services in to 2000s (Table 1).

The development of “social networking services” was directly inspired by network theory. The first SNS was sixdegrees.com, established in 1997 (boyd and Ellison 2007). Its name came straight from SNA theorist Stanley Milgram’s famous

Table 1 The network of network theories

Discipline	Methodologies	Key thinkers	Network types
Social psychology	Social network analysis	Moreno, Granovetter, Rogers	Group formation and dynamics; diffusion
Mathematics	Algorithmic network analysis	Barabasi, Watts	Emergent patterns with nodes and links
Sociology	Global and societal network analyses	Castells, Wellman	Global flows of goods, information, people, capital
Social studies of science and technology	Actor–network theory	Latour, Callon	Human and nonhuman actors

premise that any two people on the planet can be connected by an average of only six jumps, where each jump is a person knowing someone else:

Inspired by the theory of six degrees of separation, sixdegrees is your personal on-line community where you have the ability to interact, communicate and share information and experiences with millions of other members from around the world, all of whom are connected to you. (Six Degrees 1999)

While Six Degrees failed commercially, shutting down in 2001, it helped set the scene for the explosive growth in SNS over the following decade: Friendster (2002–2015), MySpace (2003–), Orkut (2004–2014), Facebook (2004–), and Bebo (2005–2013). These services were designed specifically to mediate existing and new social relationships, and to exploit the dynamics of both technical and social networks. SNSs established a different paradigm for networked media, characterized by features such as user profiles, friend-connections, messaging, social graphing, media sharing, and user-generated content. However, social networking of sorts could be seen on the early internet.

Social Networking on the Internet Before Social Networking Services

Computer networks became social in two steps. In the first step, the network infrastructure established a connection for every uniquely identified device on the network, following the Open Systems Interconnection (OSI) model. Each device was uniquely identified and could communicate reliably with any other device. Once this technical network was stable, it became possible to give users online identities, such as user accounts, and software with which to communicate. However, socialization online was sometimes perceived to be frivolous and wasteful. Making early submissions to funding bodies for the network, advocates like Lawrence Roberts, chief scientist at ARPANET, argued that the infrastructure was for transferring files and sharing processing power. Sending messages was “not an important motivation

for a network of scientific computers” (Abbate 1999: 108). Yet, when messaging and email were first introduced in the early 1970s, they were taken up by users with extraordinary enthusiasm (Abbate 1999). This take-up surprised network designers and administrators. Email became useful not only for getting things done, but also for initiating and sustaining relationships.

Developers of email features gradually negotiated simple ways that users could manage and express identity and relationships. Users wrote email “footers” including contact information in each message, and sometimes, personal mottoes or epithets. Users stored lists of contacts in electronic address books. Mailing list “exploder” software and newsgroups circulated messages within a large group, a feature popular with *Star Trek* fans on ARPANet. Even today, email remains the foundation for much interpersonal communication online. However, email and other services lacked mechanisms for persistent identity, managing trust, or supporting collaboration (Jordan et al. 2003).

When the internet came to homes in the 1990s, simple interpersonal communication services such as email, chat, discussion lists, and networked games quickly became popular. Users of these services effectively created content for each other, making the content more relevant and valuable. These services were relatively cheap to run, but strategically important. Alongside the “browser wars” and competition between search engines, some of the fiercest competition was over free web mail such as Hotmail, Yahoo Mail, and Gmail. Email and other services were governed by the well-known phenomenon of Metcalfe’s Law: a network service becomes increasingly valuable as more people take it up. The more potential correspondents there are on email, the more valuable the service is to each user. Because much internet software was free, or very low cost, many services were taken up very quickly indeed. However, where internet email was an open standard with a distributed architecture, SNSs would become centralized walled gardens that captured their networked users’ identities, content, and activities.

Another misconception about “virtual communities” common in the 1990s was that online activity was something separate from “real” life. Without the usual markers of physical presence, online identity seemed to be detached from the everyday, almost infinitely malleable. Virtual spaces such as the real-time text-based role-playing spaces of MUDs and MOOs were read as offering unlimited potential for identity play. Making this binary split between online and offline life tended to encourage either trivialization or exaltation of online activities. Going online became either a cowardly escape from “real” life, or an ecstatic entry into a new world of infinite possibilities.

These early assumptions that people would be attracted to play with their identity were contradicted by the vigorous take-up of SNSs in the 2000s, where “real” identity in online spaces was almost always foregrounded. Most people preferred to present online what they perceive to be own authentic identity rather than experiment with new personae. Rather than a detached and otherworldly game, using network media was to become another aspect of everyday life. Most social software gives users new ways of linking to existing friends, or making real connections with others with dating services and apps like Grindr and Tinder.

SNSs attract and keep track of friends distributed across the world, and structure how they can communicate with each other.

So the pattern of media and communications that emerged by the mid-2000s was quite different from the mass media model. Rather than centralized producers and distributed consumers, much internet media operated as sociotechnical networks. This made relevant a range of social science disciplines that developed the concept of networks. Each uses the network abstraction in a different way. Each can help understand the character and significance of the processes of innovation associated with the emergence of SNSs.

The meaning of the word “network” is complex, and has shifted over time. In an earlier sense, a network is a mesh of intersecting threads that form a light fabric, such as a net, that can capture things. In a different, more abstract sense, a network is anything that can be modeled by identifying nodes and the links between them. Links are also known as “ties” or “edges.” In a social network, the nodes are individual people who are connected with one another through social ties. In network theories, the pattern of these connections – the network – often becomes more important than the nodes themselves. Analyzing networks often means adopting an abstract and structural conception of the world. Network approaches allow social researchers to trace relationships between local and global phenomena without intermediate categories such as groups, classes, or nations.

Social Network Analysis

The methods and approach of SNA can be traced to a branch of social psychology established in the 1930s as sociometry (Moreno 1953). Sociometry typically traced the connections between people in a certain population to create drawings of social relations, called sociograms. The formal modeling of networks drew on practices such as building family trees in genealogy, and modeling atoms in particle physics (Freeman 2004: 121–8). Founder and advocate Jacob Levy Moreno chose to research populations in closed institutions, such as reformatory schools and prisons. He would spend time at these institutions asking each person in a defined site to identify the people to whom they feel a positive or negative connection. He would then graph these networks to identify the people who were most influential and those who were more marginal. In this way, he could attribute individual psychological problems to positions in the social network. Some people would be identified as super connectors, with many positive relationships, while others could be shown to be on the fringe, alienated from the group. Rather than attributing psychological health or dysfunction to individual qualities or pathologies, Moreno pointed to the roles that individuals play in the network as fostering and perpetuating group psychology.

In spite of Moreno’s efforts, SNA was always overshadowed by the liberal pluralist social survey, and the Marxist traditions of critical class analysis. These dominant methods seem well tuned to questions of modernity, mass society, and mass media. When the majority of people confront the same institutions, watch the

same films, read the same newspapers, vote for the same candidates, the ways of understanding these subjects can remain relatively flat. Surveys could reveal the tastes of market segments, but not the dynamics of relationships. Moreno's attention to network dynamics did not sit well with the neoliberal emphasis on individual responsibility. However, as social practices and media changed, these traditions of the mass have been subject to increasing criticism, not least from theorists of networks. These criticisms become particularly pertinent for understanding social media.

For example, SNSs demand a very different approach from that used for understanding cinema. Where watching cinema is like dreaming, using SNS is a mediated form of socialization. In this light, it is not surprising to recall that Moreno directly challenged the Freudian tradition of psychoanalysis and dream interpretation, which is influential in theories of cinema. Rejecting the study of repressed libidinal energies inside the subject, Moreno attributes individuals' psychological traits to the patterns of interaction with others around them (Marineau 1989). In line with this, it seems possible that for understanding social media, attention to dynamics of relationships may be more productive than interpreting internal mental lives.

While it remained marginal into the 1970s, some work on social networks came to be recognized. For example, Granovetter's now well-known research reveals the **strength of weak ties** (Granovetter 1973, 1983). He argues that a person he calls "Ego" (1983: 202) tends to have the most regular social contact with close family, friends, and work associates. These groups are tightly interlinked, so that many in each group know the same people. Therefore, at the close level, Ego's sociogram is densely interconnected. These strong ties validate and support Ego's individual identity, but also tend to replicate similar values, knowledge, and social status in comparison with the wider society. This dense pattern operates as a conservative and dulling force for individuals in a close-knit group. At points when it is useful to discover new solutions, there is greater value in weaker ties. Weaker ties are not shared by many of those in the central circle, and therefore allow greater social mobility, opening up different work opportunities, bringing in new ideas (music, philosophy, activism, and so on). This suggests that overall social cohesion is better served by promoting less cohesion: or at least, supporting practices and institutions that mediate connections between internally cohesive but externally divergent groups.

Another question in the SNA tradition is how innovations diffuse across a population (such as technological devices, new ideas, or popular culture) are taken up across a population. Anything new faces initial ignorance, indifference, and resistance. How successful innovations overcome these obstructions to become taken up widely is another question for network analysis. Surveys only reveal social states before and after a trend has emerged. The influential sociologist Everett Rogers (1962) identified a pattern to the **diffusion of innovations**. There is rarely a steady accumulation of adopters. Instead, at different stages in the take-up, different groups have different motivations and dynamics. In the initial phase, those who take up the innovation are highly informed and educated, and are involved in the development and refinement of the new thing. These are the innovators

(2.5%). The next group he calls the early adopters (13.5%), still small in number, but taking their lead from the innovators. The largest groups are the early majority (34%) and late majority (34%). Finally, the laggards are the remaining group that persists in resisting the change (16%). According to Rogers, the pattern of adoption of innovations produces different groups.

It's a Smaller World After All: SNA Meets SNS

The field of SNA found new life in the 2000s with the work of mathematicians such as Albert-László Barabási (2003) and Duncan Watts (Newman et al. 2006; Watts 1999, 2003). This work exploited the cheap availability of enormous computing power in two ways. First, more powerful computers made it possible to experiment with more complex network models, and to analyze larger volumes of information than previously possible – big data. Second, the researchers could access datasets that had never been available before, such as the internet movie database's records of actors and films, aeroplane travel records combined with health records for contagion, scientific collaborations, or file sharing networks (Watts 2003). They used these data sets to test conclusions they had reached using network simulations.

Boosted by greater computer power and available datasets, SNA theorists pursued a number of themes amendable to network analysis. They asked how easily one participant in a given network could find another: the search problem. If the network was sufficiently connected, even on a large network, people could find each other through only three or four hops. This is known as a **small world network**. Their modeling revealed that these are more common than expected, but also confirming the importance of Granovetter's weak links. They found mathematical proofs for diffusion theory by investigating information percolation: how a new idea or fad circulates through different kinds of network and becomes widely available. Network concepts were further popularized by writers such as David Weinberger (2002), Mark Buchanan (2003), Steven Shaviro (2003), and Steven Johnson (2002).

While it seems that networks might promote more egalitarian social formations, network models showed that there was a tendency for some nodes to become much more highly connected: a phenomenon known as the **power law**. This affirms the principle that the rich tend to get richer. This can be seen in blogging and vlogging networks, where some blogs and vlogs have millions of connections, while others languish. While some of this phenomenon can be ascribed to the quality of the content, the network effects of the power law drive the growth of YouTube and blogger stars. This pattern has also been seen in the increasing dominance of Facebook as a social media platform and Google as a search engine and service provider.

The SNA tradition offered developers of SNSs both a philosophy and methods for designing technologies for mediating networks. Facebook refers to its models as the “social graph.” SNA approaches could distinguish patterns of social relationships well below the threshold that traditional media relate to their audiences. Facebook could work with a massive but intricate record of links between friends, institutions,

and events that became key to profiling its users. Along with establishing friendship relationships, Facebook encouraged its users to “Like” products, organizations, celebrities, and other brands. Using mathematical and statistical techniques for analyzing social relationships and affiliations – the kind of data that are useful for market intelligence and targeted advertising – SNSs modeled, visualized, extended, and exploited what were previously dispersed and largely virtual: the connections between people and things.

SNSs represented a dramatic recentralization of information infrastructure in comparison to distributed technologies such as email and conventional websites. For users, SNSs provided cohesion and orientation within an otherwise vast and sometimes intimidating network space by providing an intensive interface to the extensive social and institutional connections across the Internet. The Internet has always featured both intensive and extensive vectors (Wark 1994). Extensive vectors of cables, TCP-IP, routers, and a variety of physical media link nodes across space. Computers and software are the intensive vectors that organize text, images, maps, navigation, and interactive elements. Client applications such as web browsers, email, and chat programs are intensive local vectors that offer “user friendly” interfaces to network services. However, SNSs were significant in integrating intensive vectors on the platform of database-driven websites with the extensive vector of the internet. Around 2004, these sites were bracketed under the label “Web 2.0,” when a plethora of experimental services on the network provided rich interfaces to centralized functionality and data available as a service on the network. By 2010, though, many Web 2.0 sites had closed down, Facebook had prevailed as the dominant platform, and the term “social media” became favored.

Many of the formal methods of sociometry and SNA were applied directly to SNS design. This was apparent in an app called TouchGraph for Facebook that took links among SNS participants and represented them as interactive visual graphs. The TouchGraph website claimed that “the greatest insights can be achieved not by sifting, but by looking at the big picture to see how items are connected” (TouchGraph 2008). These tools allowed users to find patterns in relationships of which no-one may have previously been aware. However, Facebook changed their policy, making friend relationships inaccessible to app developers, and TouchGraph stopped functioning in 2010. Facebook itself continued to build tools for analyzing the social graph.

Unlike the traditional research practices, with SNS the results of the SNA research are actually fed back to the users, potentially transforming the social dynamics being measured. A notorious example (Kramer et al. 2014) is an experiment on emotional contagion in which Facebook researchers performed a sentiment analysis on the status updates of millions of Facebook users, and selected positive messages for one group and negative messages for another. They analyzed the following updates from each of these groups, and found, indeed, that the groups’ posts manifest more positive and negative sentiment. Through a process of translation (discussed later in the chapter), friends have become a quantifiable, homogenized, and commodified. Facebook’s newsfeed, which itself was controversial when it was first introduced, provides real-time updates on many of the things that friends

are doing. Sociometric data feeds back directly into social media world picture. Using Heidegger's terminology, the result is that "present-at-hand" abstracted knowledge comes to be actionable and "ready-to-hand" (Heidegger and Stambaugh 1996).

Social life has changed in complex ways with the constant presence of Facebook, mobile phones, and other network technologies. Users of these innovations have adopted new cultural practices that mediate social networks in different ways. So, even if SNS were originally stimulated by SNA, these innovations have a life of their own, generating significant qualitative shifts in culture. The question is not only how innovations diffuse through networks, but also how the networks themselves change through the cultural negotiations of these innovations. Network technologies both extend the global capacities for gathering and transmitting information, and strengthen intensive capacities for processing, visualizing, and acting on this information. These developments have implications not only for sustaining existing social relationships in different ways, but also for new social relationships. For example, research shows that heavier users of networked information technologies have more connections, and more "weak tie" connections (Tkach-Kawasaki 2003).

Many of the findings of SNA, both in its earlier incarnations and in its computer-accelerated forms, seem quite compelling. However, mathematical social analysis has fundamental limitations because its methods are detached from the social and historical contexts of the phenomena it models. The results cannot validate the reductive network determinist philosophy on which it is grounded. The researchers themselves sometimes acknowledge the qualifications about the validity of their datasets, and the huge range of externalities beyond the scope of the modeling. At the least, network theorists of social networking websites must look elsewhere to understand the historical conditions within which this new media genre emerged.

Castells' Network Society

Around the turn of the millennium, sociologist Manuel Castells (1996, 1997, 2000) identified large-scale social changes that he saw as evidence of the emergence of the network society. His epic sociological analysis of shifts in society and economy can inform a network analysis of SNS. Qualitative and historical sociological accounts of the global economic and institutional changes to the network society provide a critical historical narrative of the emergence of networks as material infrastructures and social practices. International business, diplomacy, and tourism helped establish distinctly networked cultures of travel, media, and telecommunications. Financial markets developed real-time market analysis and transaction processing as early as the 1980s. Large organizations used workgroup systems such as LotusNotes to establish customizable database systems mapping data onto business processes.

Castells observed that transformations in large-scale economic and cultural flows had changed the ways that global power operated. These changes in "strategically decisive economic activities" (Castells 1997: 1) included a proliferation of computers and networks, restructurings of capitalism, and the demise of statism. He

argued that hierarchies had always been inefficient and bound to corruption, but prevailed because they achieved instrumental outcomes more quickly and reliably than networks. Since the 1970s, though, information technologies made networked models of organization more viable. Networks were always more flexible and inclusive, but they were difficult to control. With information and communication technologies, they could be coordinated more effectively. Castells argues that this networked paradigm swept through the world's institutions, restructuring markets, reconfiguring cultures, and changing working and family arrangements.

Castells argues that social restructuring with the growth of networks has created a bipolar opposition between globalization and identity. On the one pole, global economic and cultural events have major impacts on local experience. Everyday activities are exposed to high-speed (but uneven) circulations of goods, people, images, sounds, and information. The "space of flows" displaces the "space of places" as a dominant influence on spatiality (Castells 1996). These flows are most apparent in financial markets, strongly biased to powerful nodes such as New York, London, and Hong Kong. The networked mode of operation has strongest influence among cosmopolitan managerial elites, and in megacities, which are locally disconnected, but globally connected.

On the other pole, says Castells, is a return to identity. In a networked global environment, people are detached from traditional certainties, and react by asserting their identity. Identities are internalized systems of meaning that give purpose to their actions. Castells emphasizes collective identity, as found in social movements such as those organized around women, gay, environmental, ethnic, national, and religious identity. While assertions of identity are widespread, its manifestations are quite diverse, he says. Some are "legitimizing identity," such as nationalisms, which extend and rationalize dominant institutions. Others are "resistance identity," based in collective resistance against oppression. Others are "project identity," such as the women's movement, which aim to transform aspects of the social environment entirely. In the online genre of SNS, the trend toward reassessments of identity takes quite a different form: the personal profile, and the ego-centric network of friends.

Social Networking: Network Society in Miniature

Compared with Castells' account of global scale economic social changes in the late 20th century, the personal stories of Facebook users seem relatively inconsequential. SNSs mediate the everyday work of creating and sustaining personal relationships, consuming news, and negotiating tastes. Along with mobile phones, though, such sites on the domestic internet (Ling and Yttri 2002) have significantly changed the capacity for individuals to use digital media to perceive their world, act in it, and organize their lives. With SNSs, the command, control, and communication technologies that have heritages in the military, financial markets and the managerial elites, came into the hands of the wider population.

SNSs constitute a new media genre based on miniaturizing, commoditizing, and domesticating the larger scale technologies of the "network society." The very

design of SNSs is a refrain of a polarity between self and the network that Castells identified as a characteristic pattern. The combination in SNSs of one's own individual profile, and the list of networked friends, manifests a similar self/net polarity. Users make themselves viable network nodes first by preparing strong statements of identity in their personal profile. They choose how to present themselves by writing about their interests, religious affiliations, political preferences, tastes in books, films, and music, and so on. Every status update becomes evidence of opinions, personal narrative, and tastes of the user. These choices operate as identity markers, immediately establishing virtual affiliations with those with similar values, and gating out those who do not. Over time, the series of status updates solidifies this impression of the subjectivity of users. The profile of the user built up in Facebook can lead to self-incrimination, as officials policing borders have been known to ask people to show them their social media accounts on their phones before deciding whether they will let them into the country.

The SNS profile operates not so much as a representation of unique or deep identity (romanticism, cinematic characters, television personalities), but as a cluster of markers within existing networks of meanings (structuralism, auto-intelligence dossier). Social software provides templates that users complete to express their own distinctive identity. Templates always limit the scope for expression so that differences can be compared more easily. Profiles often draw directly or indirectly on existing local or global brands, and the meanings associated with these: differences between the Cure and Beyoncé, or *Goodfellas* and *The Lion King*. These meaning networks are always subjective – both representing and producing the user as subject, and framing the subject as network node.

Circling around the model self of the SNS profile, and forming the other side of the net/self binary, are the networks of “friends” on the same service with whom the user has negotiated a relationship. In this manifestation of a network, the database makes literal and finite what is otherwise relatively ephemeral and indeterminate: the sum of all one's relationships. Of course this list is always incomplete, but it gives an impression of completeness. It supports a distributed theatrical performance of social networking within the constraints of the SNS.

SNSs such as Facebook are centralized, modulated, and moderated networks. They operate with a massive master database, design a seamless user experience, and impose controls on behavior on the network, such as deleting as unacceptable images, even those of women breast-feeding. Many other network services – blogs, email, and the web itself – are more distributed in their technical and organizational structure, where control over the nodes is diversified, and links are arbitrary and heterogeneous. SNS architectures are less networkly (centrally) owned, hosted, and administered; they demand adherence to terms of service, controls, and regulation. In return for this control, they offer more accessible, reliable, and comprehensible experience of networking. SNS designers drew lessons from a decade of widespread domestic internet use by providing strong features of connectivity and supporting user production. These features are a smaller version of larger social and economic changes: personalized spaces of flows and individuated encounters with timeless time.

Individualized Spaces of Flows

Castells argues that changes in global network flows have changed how distinctive local places are formed. For example, cities well positioned in global flows tend to gather disproportionate wealth and activity. Over time, these flows are expressed in architecture and urban morphology. The character of a city tells stories about what has passed through it. Global flows transform places in different parts of the world in very different ways. The traces of the flows of the cocaine trade are apparent both in the streets of Colombia and in ghettos in American cities. Castells also analyzes processes of homogenization of spaces around the world in the image of the tastes of the global managerial elites. They “...create a lifestyle and... design spatial forms aimed at unifying the symbolic environment of the elite around the world, thus superseding the historical specificity of each locale.” (Castells 1996).

There are three main implications of the take-up of SNSs for space.

First, SNSs have an immediate presence within physical spaces, of course, in the choices that individuals and families make about where they should locate computers in the home (Lally 2002), or the ways that they inhabit private and public space with mobile media. Whether talking on mobile phones or reading from mobile screens, mobile media users become, at least temporarily, peculiarly displaced from the space around them (Schwanen and Kwan 2008).

Second, the SNS interface collects news from “friends,” wherever they are, into the same intensive information space. If the managerial elite homogenized the spaces of global business with the uniform of business suit, sushi restaurants, and postmodern skyscrapers, the dominant SNSs homogenize the experience of online sociality. In Facebook, each user’s personalized information appears on the same screen template, invoked anywhere that the website is used. For each user, the same image appears wherever they connect. Making few distinctions between geographical, professional, or subcultural location, the SNS itself becomes the only consistent element. It feeds narrative fragments, and frames them within a flow of concatenated meaning fragments that make sense only because of relationship externalities. SNS features encourage users to perform particular standardized language acts that reinforce or change actual social relationships.

Third, SNSs tend to change the balance of influence between relationships sustained through physical proximity and those sustained through networks. They model distant intangible social connections as explicit and uniform links. They offer a personal version of global networks of intelligence, trade, and news, bringing to everyday life a smaller version of the global, informed worldview of military, industrial, and media technologies. Circulating through the data cloud, this information moves outside reference to any single place or time. Therefore, SNSs introduce different social, symbolic, and cultural spaces from traditional media such as telephones, television, music, cinema, and newspapers.

For each user, the SNS generates a living social graph with the individual at the center that models, reifies, externalizes, and often strengthens social connections, while also attracting highly targeted advertising. When the user makes a new connection, it becomes part of the graph: revealing who has sent public or private

messages, uploaded or linked to particular videos or images, and so on. The social graph for any individual comprises multiple and often interconnecting social networks. The technical features of these sites are tuned to support individual desires, and to mediate the dynamics of social relationships. Beyond the core interpersonal relationships they mediate, social networking services connect with other networks: advertisers, developers, activists, and institutions. Social networking services are always working across several networks at once. The information about who is connected to whom on the network has strategic value for the networking companies and partners that became increasingly exploited (Fuchs 2014).

The spaces of flows opened by the SNS are highly accessible to friends, but are also open to complications and miscommunication. Unlike the group dynamics in everyday life, where identity can remain ambiguous, and statements are easily lost to time, comments in social software circulate and persist. Many critics warn that private behavior recorded on SNSs might compromise future work prospects. On Facebook, for example, users are advised to be vigilant in checking any photographs that their friends upload and tag, which may damage their reputation in someone's eyes. Users have to be careful to remember who they friends with: one employee claimed a sick day, while bragging on his Facebook that he was "still wasted" and would take a "sicky" (Perez 2008). He forgot that his boss was a Facebook friend. He was not given the sick day.

Personal Timeless Time

The collective experience of global media events, such as the Kennedy assassination, the fall of the Berlin wall, the 9/11 attacks, or the Olympic Games have been associated with electronic mediation since at least the live radio broadcast of the explosion of the Hindenburg. Live coverage of such events tends to create a sense that the world is sharing the same time: a global present (Hassan and Purser 2007). Such momentous global media events, catastrophic or euphoric, are by their nature extraordinary and world scale. While SNS events operate in a kind of global present, they can include both large-scale news events, and everyday personal news. If global media events are momentous, social media events are momentaneous. They are personal, relatively local, everyday, and transitory. When an engagement is announced, a child is born, or someone passes away, the event is marked through its circulation on social media.

Even if SNS events are in themselves often personal, their accumulated presence in people lives can be significant. Operating in an indeterminate space and time, they are characteristic of network society temporality. Castells refers to "timeless time," when the "informational paradigm and the network society induce systematic perturbation in the sequential order of phenomena" (Castells 1996: 464). The placelessness of SNSs allows them to cut across work and leisure, the close and the distant. Friend updates appear at any time, outside reference to most usual geographical associations of particular relationships. With social media, work friends can remain present outside work hours. Friends in distant time zones talk

about dinner when you're only waking up. Facebook's news feed provides a constant stream of updates from a user's friends anywhere. Sometimes these updates have sequential meanings, but many are fragments curated by proprietary algorithms.

In the same ways that financial markets provide minute-by-minute updates on commodity prices, or global news breaks on radio simultaneously, social networking sites provide real-time connection to the emotional and practical states of social contacts. These communications operate below the threshold of instrumental connectivity that motivates a phone call or personal visit. These sites engender an impression of "always on" connectivity, not only to the technical network, but also to social events. This extends Castells' observation that "the network society is characterized by breaking down rhythmicity, either biological or social, associated with the notion of a lifecycle" (Castells 1996: 446) to an everyday social level. The regime of personal timeless time breaks down temporal boundaries that conventionally limit to particular times and places one's socialization with extended networks. Everyone is now connected to others dispersed across the networks.

As everyday life increasingly opens onto networks, people experience "ambient intimacy" (Reichelt 2007), the constant background awareness of affective connection with others. With mobile devices, broadband, and wireless connectivity, and live feeds from friends, these personal spaces of flows quietly impinge on ongoing activities in spaces of places. SNSs help extend a tendency for attention to drift away from the immediate lifeworld and onto other spaces, a phenomenon that has been controversial at least since the Walkman, or even the novel.

As network technologies become more and more intimately embedded in everyday activities, it becomes apparent that Castells' large-scale conceptual tools are not entirely sensitive to changes on the small scale. In Castells' eyes, the network society seems to sweep in as an irresistible social and economic force transforming lives and societies. Among many other examples of innovation, social networking services show that change does not move through society uncontested or unchanged. The technologies mediating individualized spaces of flows and personal timeless time have been taken up, but in patchy ways, constantly negotiated: sometimes embraced, and often resisted or repurposed. Details of specific software features, processes, and administrator or user actions are often significant in whether other users take up innovations, and how they apply them. Thrills over innovations, anxieties over privacy and control, and the efficacy of connection play out a million times, but never in the same way. By the late 2010s Facebook's dominance of social networking had led to popular and political resistance.

Friends in Translation: An ANT Approach to SNSs

Perhaps the foundational move of social networks was to change the meaning of friendship. The translation of social relationships into a sociotechnical status was a key transformation that can best be understood using the sociology of translation, or actor–network theory (ANT). This is another approach that uses the trope of the

network to explore inter-relationships between social and technological change. Its methods and philosophy are very different from the mathematical empiricism of SNA, and from Castells' grand global social and economic theory. The innovation of sites such as Facebook and Twitter is not to create something entirely new, but to reconfigure and extend existing entities, relationships, and desires.

ANT shares the ground-up orientation of SNA, seeing change and complexity emerging through connections, or associations, between actors. However, where SNA uses formal and mathematical methods to model networks, ANT uses ethnography and interpretation to trace and analyze them. Where SNA networks usually contain only humans, ANT analysis includes both human and nonhuman as actors. The computer's user is an actor, but so are the computer, the software running on it, the technical network devices to which it is connected, and so on. Each of these actors has distinctive affordances and constraints. In combination, the ever-more-complex associations between actors can be traced as a network. Treating hardware, software, and "wetware" symmetrically – not deciding in advance what each can do – is the starting point for a material semiotics that reads information, meanings, materials, and operations circulating through bodies, machines, and spaces.

ANT is not a scientific tradition that aims to provide analytical methods that can be applied in the same way to networks anywhere. It is an ascientific tradition in which every network, every node, and every analysis remains different. Its methods are critical and interpretive, with connections to philosophy, sociology, and science and technology studies. Where SNA operates with a finite number of actors in its models, ANT networks are theoretically infinite, and made real only by the work of the ANT researcher following the actors. According to ANT theorist Bruno Latour, "Network is a concept, not a thing out there. It is a tool to help describe something, not what is being described" (Latour 2005: 131). Earlier ANT work by Latour, Woolgar, Callon, and others makes different readings of technology in society by tracing extended chains of association of human and nonhuman actors. In taking on case studies from electric vehicles to water pumps, fighter aircraft to biological laboratories, ANT scholars not only provided insights into the particular case studies, but generated frameworks and concepts that can be mobilized again.

One of the key ANT concepts is translation. Historian of science Michel Serres, a strong influence on ANT, explains that "(t)ranslation involves creating convergences and homologies by relating things that were previously different" (Serres in Callon 1980: 32). Translation provides a way of thinking about friends in social networks. An entry in a networked database is conventionally something very different from friendship. Friendship is a powerful assemblage of psychological states, social rituals, norms, and values. While it is largely virtual, friendship operates with great force. Personal trust, loyalty, and group affiliation bind people to one another. The reliability of this force is indeed a founding assumption of SNA: it is the glue that holds the network together.

Therefore, when social network sites such as Friendster first introduced "friends" as a feature of their social networking website in 2002, it was more than a cute metaphor. The enrolment of "friendship" to the service of a new website genre was an act of violence, which has since been forgotten. The designers appropriated the

highly socially valued convention of friendship and transformed it into a database operation. The practices and the meanings of friendship were translated into the technical event of creating Friends. Social network researcher danah boyd's narrative of the controversies that followed provides insights into this translation (boyd 2004). While Friendster became popular very quickly, with six million users after 2 years, the clumsy design of the Friend feature provoked considerable contestation and resistance. The Friend software operation was not initially perceived as a true translation of the cultural conventions of friendship.

Relationship indicators in Friendster were binary: Friend or not. When traversing the network, there is no way to determine what metric was used or what the role or weight of the relationship is... Because of this weakness in the system, the weight of a Friend connection is often devalued because trust cannot be guaranteed. Users publicly recognized this by using the term Friendster in everyday conversation to describe one's Friends. Overheard conversations might include statements such as "She's not my friend, but she's my Friendster" and "Did you see that Alex is Drew's Friendster?" (boyd 2004: 2).

Users then exploited weaknesses in the Friend feature by creating Fakers: nonexistent Friends. Some Fakers passed as someone real for fraudulent reasons. Male Fakers created profiles of nonexistent female friends and wrote Testimonials to themselves, aiming to attract real women. Some people used bulletin boards to make coded announcements about drug deals (boyd 2004: 3). Other Fakers were more for fun: fictional characters, such as Homer Simpson and God. Other users made their own translation of the Friend feature by creating Friendster identities for groups such as Brown University, Burning Man or San Francisco (boyd 2004: 3).

The narrative of Friendster's mistranslation of friendship takes an unfortunate turn with the attempts of administrators to restore legitimate alignments between Friends and real friends. Trying to correct these errors, they began to delete many of the Faker accounts. Some users were upset by these administrator interventions, calling it "Faker Genocide," and responded by creating more and more new Fakers in protest. They saw destruction of Fakers as placing limits on the creativity of the network. Groups such as musicians who were extending the functionality of Friendster by publicizing their music and communicating with fans were shut down by administrators. These dynamics are credited with the downfall of Friendster, and the rise of MySpace, which actively courted disaffected Friendster users (boyd and Ellison 2007). In the 2010s, Facebook began enforcing a "real name" policy, deleting accounts of people with nonnormative identities (transgender, drag queens, survivors of abuse) on the grounds of inauthenticity. As Haimson and Hoffman (2016) argue, for these people these identities are more authentic than their real names. While there was some resistance to these policies, it did not slow the growth of the platform.

Friendster did not succeed in accurately translating conventional friendship into social software friendship. Instead, almost without realizing it, it established something new and more powerful: a new kind of Friend, and a network that grew beyond its own designs. Friendster stumbled because it tried to control that network, and to keep the translation pure. Friendship on social networking sites is related to, but

always quite distinct from, the usual sense of friendship. Using an actor–network analysis, nonhuman Friends – entities in the database – become parties to reconfigured relationships. They are actors involved in moderating performances of affiliation and communication, which are employed tactically by human users. When another person becomes my social networking Friend, it is true that we are in some clumsy way, declaring a public friendship. However, its significance is also more pragmatic within the control logic of the networking system. In adding another Friend relation to the actor-network, we open up new domains of access to the wider social network, and to the intersubjective flows they mediate. I can now see another private profile, receive updates, and connect with others beyond.

The spectacular growth of social networking was driven by a productive mis-translation of friendship. Social friendship normally operates outside the market: friends do things for one another without expecting payment. They “share” things with others. Friendship is an economic externality. The business model for SNSs is to import the values and operations of friendship, and to put them to work generating activity and content on the site. Friends conducting significant social practices – affirming affiliation, making plans, telling stories, and showing images – are also creating content that, and generates profiles for customised advertising. All this work must be voluntary, so the site maintains an atmosphere of fun and informality. However, it rewards this labor by providing something of value to its users.

Facebook as Theatre, Oligopticon, and Panorama

Friends in Facebook share some resemblance to the informal social contract of friendship, but only because they operate as its living diagram. Like all diagrams, it is an intensive medium that abstracts and simplifies as it represents, and it represents to control. Friends lists are like live shared hyperlinked personal address books. They aggregate knowledge about relationships, externalize them, and model them as a network. They provide a vocabulary and medium for users to make assisted language acts: promises, declarations of states of affairs, and other statements (Austin 1975). Status updates or profile changes sometimes announce dramatic life changes, such as new relationships or break-ups. Becoming friends, or events that feature on Facebook’s “news feed,” seems to be a relatively unambiguous events. Integrating every statement into a homogenized flow of reports reifies and authenticates personal events in public view. It seems to provide a synoptic view of friends’ personal events.

Facebook’s flaunting of visibility obscures as much as it reveals. The site creates an impression of comprehensiveness through a kind of theatre. It is a theatre that frames on-stage ritualized actions featuring only those who care to play a role. It mediates presentations of the self (Goffman et al. 1997) as micro-narratives, epistolary exchanges, and minigames. It opens arenas for action, theatres of war, with heads-up displays for social intercourse. It populates these arenas by extracting texts and images from dispersed volunteer reporters whose work populates the databases. However, although Facebook seems to contain the world, this is a stage inhabited

only by those who choose to be there. In SNA terms, the network dataset has dubious representative value.

In *Reassembling the Social*, Latour (2005) develops a useful critique of some dominant ways that social scientists and others imagine society. On the one hand, he observes an alternation between paranoia and megalomania associated with the power of technologies and governments to capture the entire social world. Arguing that paranoia and megalomania are based on the same overstating of the power of technologies, Latour argues that technologies tend to create *oligoptica*, which can see single things with great clarity. However, these images are very fragile, and regularly fail. They do not create a *panopticon*, following Bentham's famous prison design or Foucault's ironic metaphorical use of the term, because they certainly cannot see everything. But what they can see is clear. "From oligoptica, sturdy but extremely narrow views of the (connected) whole are made possible – as long as the connections hold" (Latour 2005: 181).

On the other hand, Latour identifies a general desire to capture the "big picture":

Contrary to oligoptica, panoramas, as the etymology suggests, see *everything*. But they also see *nothing* since they simply *show* an image painted (or projected) on the tiny wall of a room fully closed to the outside... full coherence is their forte — and their main frailty (187)

Using Latour's terms, Facebook is a personalized oligopticon patched through a panorama. The oligopticon reveals the reported lives of all friends with great apparent clarity. The interactive interface, flowing from page to page provides the projection onto the "wall." Lucidly captured traces of Friends' activities are presented in commoditized form as the news feed panorama. While the news feed was initially controversial, as too invasive, after it achieved acceptance, it became one of Facebook's most distinctive features. Following Facebook's clean blue and white aesthetic, the newsfeed delivers a constant flow of digested updates about your Friends. Disparate sources of information are sutured together as an apparently cohesive news narrative.

Conclusion

The dramatic growth in social networking sites in the 2000s helped reconfigure the global mediascape by introducing much more finely grained networked topologies for mediated interaction. Although the implications of these changes are not yet fully apparent, it is clear that traditional consumer habits and media institutions are being challenged by a new paradigm.

This chapter has followed the story of the emergence of SNS sites, and used this story to explore the similarities and differences between three significant traditions working with the concept of the network: SNA, NS, and ANT. These traditions, which are sometimes antagonistic, or even indifferent to one another, cannot be synthesized into a single overarching network theory approach. SNA's mathematical modeling of relationships has been applied successfully in instrumental big data

applications, and clearly reveals some patterns in network interactions. Its methods are most directly relevant to the design of SNSs. However, as a way of understanding society, these methods arguably lack richness of meaning or sensitivity to context. Their reductionism, methodological compromises, and universalism call into question their validity.

NS readings of networks do not take the same formal empiricist approach as SNA, but they are grounded in diverse sociological readings of historical change. By these readings, networks are not flat. Using a narrative and critical approach, NS accounts find that networks can be much more complex than models of links and nodes. They are interwoven through institutions, technological changes, social movements, and changing identities. Some of the concepts from NS resonate with innovations in SNSs, particularly the changes in the structure of time and space. The mediation of SNS seems to manifest in miniature everyday experiences of timeless time and spaces of flows.

Finally, unlike the two other approaches, an ANT reading of SNSs reveals the significance of shifts in the character and meanings of network ties in creating new networks: distinctive arrangements of technical entities and human meanings and routines. SNSs helped reconfigure networks of human and nonhuman actors, changing the meaning of friendship by controversially inserting the database entity of the Friend. Similarly, there was controversy when Facebook introduced the newsfeed, enhancing its operation as an oligopticon/panorama for personal relationships. However, unlike SNA, ANT approaches are not easily translated for instrumental ends.

While there is no possibility that SNA, NS, and ANT can be synthesized into a single approach, there is value in understanding how differently the three contribute to knowledge about SNSs. The contrast between formal/mathematical, sociological, and material semiotic approaches to networks illustrates the challenges and opportunities of interdisciplinarity, and the morphology of networks of knowledge.

In the 2010s, the concept of the social networking service receded, and these sites became known collectively as social media. This conceptual frame reflected a normalization of the practices of using networked media, and a recognition of the institutionalization of these sites as media. As social media became more familiar, the more conventional concept of the social displaced the concept of the network, and the network became associated increasingly with the technical means of connectivity.

References

- Abbate J (1999) Inventing the Internet. MIT Press, Cambridge, MA
Austin JL (1975) How to do things with words. Oxford University Press
Barabási A-L (2003) Linked: how everything is connected to everything else and what it means for business, science, and everyday life. Plume, New York
boyd d (2004) Friendster and publicly articulated social networks. Paper presented at the conference on human factors and computing systems (CHI 2004), ACM

- boyd d m, Ellison NB (2007) Social network sites: definition, history, and scholarship. *J Comput-Mediat Commun* 13:210–230
- Buchanan M (2003) *Nexus: small worlds and the groundbreaking theory of networks*. W. W. Norton and Company, New York
- Callon M (1980) Struggles and negotiations to decide what is problematic and what is not: the socio-logics of translation. In: Knorr-Cetina KD, Krohn R (eds) *The social process of scientific investigation*. D. Reidel Publishing Company, Dordrecht, pp 197–220
- Castells M (1996) *The rise of the network society*. Blackwell Publishers, Cambridge, MA
- Castells M (1997) *The power of identity*. Blackwell, Malden, MA
- Castells M (2000) *End of millennium*. Blackwell, Oxford
- Freeman LC (2004) The development of social network analysis: a study in the sociology of science. Empirical Press/BookSurge, Vancouver/North Charleston
- Fuchs C (2014) *Social media: a critical introduction*. Sage, London
- Goffman E, Lemert CC, Branaman A (1997) *The Goffman reader*. Blackwell, Cambridge, MA
- Granovetter MS (1973) The strength of weak ties. *Am J Sociol* 78:1360
- Granovetter MS (1983) The strength of weak ties: a network theory revisited. *Sociol Theory* 1:201–233
- Haimson OL, Hoffmann AL (2016) Constructing and enforcing “authentic” identity online: Facebook, real names, and non-normative identities. *First Monday* 21(6)
- Hassan R, Purser RE (2007) 24/7: time and temporality in the network society. Stanford Business Books, Stanford
- Heidegger M, Stambaugh J (1996) *Being and time: a translation of Sein und Zeit*. State University of New York Press, Albany
- Johnson S (2002) *Emergence: the connected lives of ants, brains, cities, and software*. Scribner, New York
- Jordan K, Hauser J, Foster S (2003) The augmented social network: building identity and trust into the next-generation Internet. *First Monday* 8
- Knox H, Savage M, Harvey P (2006) Social networks and the study of relations: networks as method, metaphor and form. *Econ Soc* 35:113–140
- Kramer ADI, Guillory JE, Hancock JT (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proc Natl Acad Sci* 111(24):8788–8790. <https://doi.org/10.1073/pnas.1320040111>
- Lally E (2002) *At home with computers*. Berg, Oxford/New York
- Latour B (2005) *Reassembling the social: an introduction to actor-network-theory*. Clarendon, Oxford
- Ling R, Yttri B (2002) Hyper-coordination via mobile phones in Norway. In: *Perpetual contact: mobile communication, private talk, public performance*. Cambridge University Press, Cambridge, pp 139–169
- Marineau R (1989) Jacob Levy Moreno, 1889–1974: father of psychodrama, sociometry, and group psychotherapy. Tavistock/Routledge, London/New York
- Moreno JL (1953) *Who shall survive?: Foundations of sociometry, group psychotherapy and sociodrama* (Rev. ed.). Bacon House, Beacon
- Newman MEJ, Barabási A-L, Watts DJ (2006) *The structure and dynamics of networks*. Princeton University Press, Princeton
- Perez J (2008) When Facebook updates go horribly wrong, Live News. Macquarie Media Network Pty Limited
- Reichelt L (2007) Ambient intimacy. Disambiguity <http://www.disambiguity.com/ambient-intimacy/>
- Rogers EM (1962) *Diffusion of innovations*. New York, Free Press of Glencoe
- Schwanen T, Kwan MP (2008) The internet, mobile phone and space-time constraints. *Geoforum* 39(3):1362–1377

- Shaviro S (2003) Connected, or, what it means to live in the network society. University of Minnesota Press, Minneapolis
- Six Degrees (1999) www.sixdegrees.com
- Tkach-Kawasaki L (2003) Internet in East Asia. Encyclopedia of community, pp 794–798
- TouchGraph (2008) TouchGraph | company overview. TouchGraph, LLC, Hoboken
- Wark M (1994) Virtual geography: living with global media events. Indiana University Press, Bloomington
- Watts DJ (1999) Small worlds: the dynamics of networks between order and randomness. Princeton University Press, Princeton
- Watts DJ (2003) Six degrees: the science of a connected age, 1st edn. Norton, New York
- Weinberger D (2002) Small pieces loosely joined: a unified theory of the web. Perseus, Cambridge, MA



Lessons from Internet Art About Life with the Internet

8

Elisavet Christou

Contents

Introduction	128
Internet Art	129
Changing Conditions	135
Public Sphere and Community	135
Mediation	138
Identity	139
Spatiotemporality	141
Conclusion	142
References	143

Abstract

Internet has been incorporated into our lives for almost two decades now. Within this time, it has proven itself to be so much more than a new technology for a new machine or “a medium of mediums.” Its relation to every aspect of life from a social, political, economic, and cultural perspective makes the Internet the most formative technology we have ever developed. Today, the length and depth of Internet’s role in our lives means that the Internet becomes part of our reality. We no longer see our lives with or without the Internet, it simply becomes “life” as “life with the Internet.” During these last twenty-five years, Internet art – from net art, to post-Internet art today – has been co-evolving in relation and in response to the Internet. As a cultural product of Internet technology, Internet art has been reflecting the multifarious changes we have been experiencing by living with the Internet. Copyright, open-source software, convergence, remix and appropriation culture, mixed-reality, and network sociality are all issues that are being raised and explored by Internet art. This chapter reviews Internet art’s evolution along

E. Christou (✉)

HighWire CDT, School of Computing and Communications, Lancaster University, Lancaster, UK
e-mail: e.christou@lancaster.ac.uk

with Internet technology and it highlights Internet art's importance and potential for Internet research. It begins by tracing Internet's technology evolution as reflected through Internet art's brief history. Important Internet artworks are being reviewed in relation to these changes. It then extensively analyses post-Internet art as a unique cultural product of contemporary life with the Internet. Through this analysis, it presents an overview of the major areas of change in relation to art and the Internet through specific examples. This chapter's important contribution is to offer a better understanding of Internet art as an art form in direct relation with a world shaped by Internet technology.

Keywords

Internet art · Net art · Post-Internet art

Introduction

Today, we are at a point of having experienced living with the Internet for almost a quarter of a century. Since the creation of the first web server by Tim Berners-Lee and the first web browsers like WorldWideWeb (later renamed Nexus) and NCSA Mosaic (later Netscape) in 1993, along with the widespread use of the home computer, the Internet has shaped and mediated all facets of our lives. It is with the popularization of the graphical browser in 1993 that Internet art emerged (Greene 2004). First as net.art and later as Internet art and post-Internet art. (In this document, "Internet art" is being used when referring to Internet art in general. Early Internet art is referred to as net.art and contemporary Internet art as Post-Internet art.) The evolution of Internet art is one that happens in parallel with the evolution of the Internet. As artist and curator, Jon Ippolito writes in the *Ten Myths of Internet Art*, "Internet art matured at the same breakneck pace with which digital technology itself has expanded . . . By 1995, eight percent of all web sites were produced by artists, giving them an unprecedented opportunity to shape a new medium at its very inception." (Ippolito 2002). Early net.art artists were part of a platform of hackers, techies, pioneers of the "open" Internet, eager to analyze, discuss, and comment on the structure of the web itself, first through online bulletin boards, then surf clubs and individual blogs (Richert 2015).

Since those early days of Internet art, a lot has changed in the way Internet technology has transformed our world and consequently Internet art itself. As the Internet is constantly driving contemporary society, Internet art responds to and reflects the ways in which our world is changing. As a result, Internet art places art within the more general cultural activity, and in that sense, it challenges the system of art itself and tries to reintegrate art with life (Olson 2009). Today, Internet art raises and explores issues relevant to all aspects of life that are being affected by Internet technology like sociality, economy, labor, identity, temporality, and sexuality, among others. At the same time, Internet art is directly challenging the traditional systems within which art existed so far. The roles of the artist, the curator, and the critic are

being questioned while new networks and platforms for interaction and exhibition are being introduced. All the above make Internet art a unique cultural product of contemporary life with the Internet that responds to the need for new forms of expression and new artistic practices to address the most urgent questions of our time. As such, Internet art becomes an important and expanding topic for Internet research.

This document examines Internet art as an art form in direct relation with a world shaped by Internet technology. Through an analysis of Internet art's significant conceptual implications during the last twenty-five years, this document identifies the changing conditions caused by Internet technology affecting how we understand our world. By doing so, this document aims to highlight Internet art as a promising field of interdisciplinary research that offers unique opportunities to deep dive into the elusive aspects of our reality and to imagine Internet futures.

Internet Art

Internet art is a new art form with a brief history in comparison to other art forms like video art and photography. The drastic changes that took place because of Internet technology during Internet art's brief history are so massive and have happened so rapidly that Internet art's development can be compared to no other art form from the past. Internet art's origins come from various Media art forms like Networked art but since the mid-1990s, a broader spectrum of artists entered the field, often completely independent from art institutions and art traditions. Today, many of the young artists who produce work within the contemporary Internet art field have no links to media art traditions and movements. As Internet art is an art form still in constant development, attempts to understand, analyze, and evaluate Internet art can only be made from a nonhistorical distance point of view. Therefore, this analysis comes with little historical perspective, brief traditions, and no clear definitions of what Internet art is. However, each example of Internet art relates and responds to the state of the Internet of its time.

Early Internet art “net.art” can be dated to having run roughly from 1993/1994 to early 2000s. The term “net.art” is the result of a software glitch on an anonymous email received by artist Vuk Cosik. The only thing Cosik could read from the alphanumeric gibberish like content of the email was “net.art” (Shulgin 1997). Cosik started to use the term and since then there have been many discussions about the term itself, as well as, about what it represented.

No matter how much the artists hated the term and no matter how much they refused to use it, others would still do so. The reason for this probably was that at the time when the term net.art appeared there was no common terminology for art created with or within the internet yet, even though art projects on the internet already existed long before. Art created with the internet would simply be called media art, or electronic art, terms which don't cover specific network issues as well as net.art does, with or without the dot. (Bosma 2003)

As net.art existed in direct relation to the Internet technology and culture of its time, many artworks from that period used a variety of media such as emails, websites, coding, glitches, games, etc. These media in turn defined the subject matter and the nature of these works. This is art that cannot be experienced in any other way. Internet defines both the place and time of the work as well as the reason for its existence. It is often political in the sense that it aims to reveal the structures behind the medium or to manipulate its faults “glitches” or to expose its commercial interests. Hacking, copying, appropriating, and sharing are common artistic practices linked to the open-source movement’s principles of transparent and copyright-free distribution of software (Brethauer 2001). Net.art exploited the characteristics of the Internet of mid- to late-1990s like immediacy and immateriality. Starting with text-based projects and criticism through e-mail and continuing with appropriating web interfaces and images, net artists have developed and issued some of the most important critiques of media and net culture (Greene 2004b).

To write about art on the Internet is to try to fix in words a highly unstable and protean phenomenon. This art is bound inextricably to the development of the Internet itself, riding the torrent of furious technological progress that brings back into illumination antique visions of modernism, torn from matter and hurled into the ether, and so made suddenly and curiously new. “Art” itself is a term of dispute – rejected by some of those who have been called “net artists” – and it is only used here tentatively, as a term of convenience under which a number of phenomena can be examined. Its coherence can only be judged later. “Net.art” is a term that has become associated with a small group of early practitioners and a particular style, and it cannot be applied to online art as a whole. (Stallabrass 2003)

These creative, radical, and political ideas and experiments with art and the Internet introduced a novel, unique, and “dangerous” for the traditional art world, art form, that was public and immaterial. The net.art community organized around mailing lists and websites like Rhizome, Syndicate, and Netttime (Rhizome was one of the first sites dedicated to new-media art and today it commissions, exhibits, preserves, and archives art engaged with digital culture. Syndicate was a list focused on Eastern European politics and culture and Netttime a political and theoretically oriented platform.) and surfclubs (Surfclubs were small- to midsized group artist blogs where the prevailing subject is Internet culture and aesthetics and where lines are blurred between the roles of artist, curator, and archivist. There were mostly popular between 2002 and 2012.) like Spirit Surfers, Nasty Nets, and Supercentral, thus taking control over the forming of net.art communities, the means of art circulation and the development of critical discourse and theory around net.art. An exploration of the new HTML, networked social habitat, net.art was and still is one of the “purest” forms of experimenting with the Internet. Olia Lialina’s 1996 artwork *My Boyfriend Came Back from the War* (Fig. 1) is an example of interactive hypertext storytelling and is considered as one of the most influential net.art pieces of the mid-1990s. Through hypertext, black-and-white bitmap images and the frames of a web browser, the work tells the story of an awkward reunion between a young woman and her boyfriend (Connor 2016).

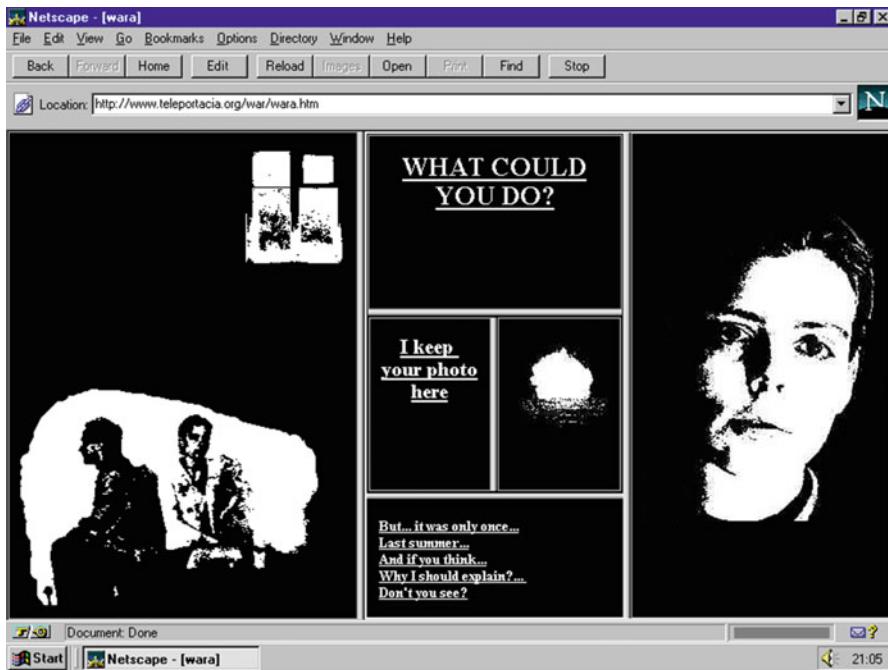


Fig. 1 Olia Lialina, *My Boyfriend Came Back from the War*, 1996. Photo: Franz Wamhof. Retrieved from <http://rhizome.org/>

My Boyfriend Came Back from the War quickly earned critical attention and today is one of the most widely cited examples of the artistic use of HTML on the early web. Despite the novelty of its approach and the euphoria surrounding its then-futuristic medium, it evokes a somber, melancholic mood. The medium of the web promised connection, but the story the work tells is one of estrangement, of the impossibility of relationships under conditions of geopolitical conflict. Nevertheless, the melancholic tone of *My Boyfriend Came Back from the War* reflects a core function of net.language, as articulated in Lialina's body of work as a whole: the elaboration of memory. (Connor 2016)

After the [dot.com](#) bubble and with the increasing use of centralized services that emerged along Web 2.0 in 2000s, Internet art introduced several new experiences for creating, disseminating, communicating, and experiencing art. Internet art of that period makes use of chat rooms, social media, online games, smart phone applications, and search engines and responds to a time where the Internet starts having a more ubiquitous presence in society. It is then when the term “Post-Internet art” emerges. During this period, many net artists began to revisit the notion of net.art which included a very specific group of artists and a specific approach to the use of technology and the anti-institutional politics of their work (Olson 2009). Net.art seemed to have failed to overturn the art world, but Internet art was very much alive and more people, both artists and audiences, started to get involved.

There are references to post-net culture as early as 2001 with examples like Lev Manovich's *Post-Media Aesthetics* (Manovich 2001). The term is coined by artist Marisa Olson and developed further by writer Gene McHugh in the critical blog "Post Internet" during its activity between December 2009 and September 2010 (McHugh 2011). However, Post-Internet art continues to resist a definitive definition and it is both embraced and rejected within the contemporary Internet art community. At this point, the Internet becomes so much more than Internet's art tool, medium, and inspiration. It becomes a conceptual condition where art accepts and comments upon the Internet as a ubiquitous presence in society and embraces a post-medium understanding of fluidity between materiality and immateriality. As Marisa Olson describes in an interview with Lauren Cornell in 2006, "What I make is less art 'on' the Internet than it is art 'after' the Internet. It is yield of my compulsive surfing and downloading. I create performances, songs, photos, texts, or installations directly derived from materials on the Internet or my activity there" (Olson 2006). *I'm Google* by artist Dina Kelberman is an ongoing project that exists as a Tumblr blog consisting of images found on Google Image Search and videos found on YouTube. The images and videos correspond with one another in form, subject matter, or theme and are arranged in a grid that expands as the user scrolls (Fig. 2). It is described by the artist as a stream of consciousness and it portrays the artist's experience wandering online hunting for obscure information and encountering unexpected results. The blog serves as a visual representation of this phenomenon.

Smoke becomes fibbers and fibbers become wood and wood, wood package and packages packed packages which become buckets which sit on bleachers which surround stadiums which call to grass which calls to painted lawns of chemical colours and turn romantic in the night. Things become other things and for a short while echo themselves as if trying to 'get it right'... Kelberman's piece suggests that everything is a reference to everything else and the reference and reverence of such obsession is our modern appetite for both documentation and endless checking in on other's documentation. (Barber 2014)

Amalia Ulman's social media performance from April 2014 to September 2014, *Excellences & Perfections*, is a scripted online performance via her Instagram and Facebook profiles (Fig. 3). During this period, she appears to undergo an extreme, semifictionalized makeover. She pretended to have a breast augmentation, she followed a strict diet, and went to pole-dancing lessons. Through careful use of sets, props, and locations, her performance evokes a consumerist fantasy lifestyle. By the final post of the project, Ulman has amassed 88,906 followers

The influence of social media has turned the camera toward the self and social media such as Instagram provide a platform to build a shrine to images that can place ourselves at the centre of the world. Ulman's work is both fascinating and terrifying because she exposes remarkable layers of hyper reality. Ulman demonstrates the ability to not only place herself in the public eye, but to construct a false identity for an audience whom she has never met. (Halsey 2016)



Fig. 2 Dina Kelberman, *I'm Google*, 2011–ongoing. Retrieved from *I'm Google* Tumblr account



Fig. 3 Amalia Ulman, *Excellences & Perfections*, 2014. Retrieved from <http://rhizome.org/>

Within this period, Internet artists can no longer adopt a position on the outside. Internet culture becomes just culture, a new cultural reality that composes the fabric of our everyday lives. The Internet is rapidly transforming the relationships and interactions of art world actors. Artists are using social media platforms to reach out to a global public, directly and in real time, bypassing traditional institutions and gatekeepers of the art establishment. Old hierarchies are shaken and new ones arise as the role of the galleries and the curators is radically questioned (Clusterduck 2018). At the same time, much of the art world has been unaware of the Internet's transformational effects not only in how art is consumed, bought, and sold, but of art itself (Richert 2015). Claire Bishop's article on Artforum's Digital Divide column on September 2012 (Bishop 2012) starts by asking "Whatever happened to digital art?" This highlights the problem with much of the traditional art world actors like museums and art institutions that fail to not only incorporate and respond to Internet art but to even recognize it as art or be aware of its existence. However, recently there are many examples of a shift in the visibility and recognition Internet art receives from the art world/market, mainly because of Post-Internet art's popularity. The complexity and depth of these changing conditions in artistic production, perception, circulation, exhibition, curation, and marketization in relation to the Internet can be barely scratched by the analytical tools at our disposal. However, examining these conditions takes us a step closer in understanding how our world – and within it art – is changing along with the Internet.

Changing Conditions

By being a cultural product of life with the Internet, Internet art symbolizes the drastic changes that took place on and to the Internet between 2000 and today. As Rhizome's Artistic Director Michael Connor describes "Post-internet refers to the new processes and conceptual dialogues that arose due to these social changes. It is a critical shift from discussing the Internet as a contained entity governing merely our digital interactions to saying something more about its ubiquitous presence and the 'reconfiguration of all culture by the Internet'" (Connor 2013). So, what are these new conditions that allow for new processes and conceptual shifts? In the following segments, we will present a brief overview of some of the major areas of change in relation to art and the Internet through specific examples. These areas of changing conditions are interconnected and overlapping; however, by identifying them, we can make connections between Internet art and Internet research.

Public Sphere and Community

Public implies more than moving outside the gallery and entails new forms of interaction between artists, audiences, and communities. Net.artists have seen the Internet as a space to share information democratically and as a discursive space outside of government or economic influence where individuals are able to communicate freely and come to common agreement through inclusive participation. Similar to Habermas' idea about the public sphere, where its transformation turns largely on its continual expansion to include more participants, we can draw parallels between Internet art's historical progression and Internet's mass media outlets. Although Habermas' idealistic version of the public sphere must be independent of both business interests and state apparatus – which is not the case with the Internet today – the Internet has still managed to transform the public sphere for everyone with access to it.

Myspace, Facebook, YouTube, Twitter, Wikipedia, etc. allowed for massive amounts of user-generated content to be published through social media platforms, enabling users to participate in the growing Internet culture. The specialized net.art world of technologically-minded people shifted to the mainstream world of people influenced by and participating in Internet culture, everyone (McHugh 2011). The Internet became the center of contemporary culture open to all and subsequently it became the public sphere for Internet artists. An open place for community, collaboration, creation, and exhibition. *The Wrong*, a great example of Internet art's Internet-shaped public sphere, is the largest and most comprehensive digital art biennale today. Happening both online and offline, *The Wrong* started in 2013 and each year presents works from more than 1000 artists. It is funded by Indiegogo, an international crowdfunding website. Its mission is to "create, promote, and push

positive forward-thinking contemporary digital art to a wider audience worldwide through a biennial online event that gathers the best of the best, while embraces the young talents of today's digital art scene."

The Wrong Biennale is a disruptive site of cultural engagement in a social milieu complaining of malaise and cynicism. It's time to consider what media art is; how our communities interact; how we operate as a community; and what it means to be a media artist in a mediated culture. (Lichty 2016)

Cuadalupe Rosales' 2015 – ongoing artwork *Veteranas and Rucas* (Fig. 4) is an Instagram account that documents the Southern California Chicano party crew scene in 1990s, largely through photographs and videos submitted by followers.

The fact that this community was so tight-knit has made the Instagram project a growing archive of family histories and a site that for the activation of memory and culture. In fact, many users have renewed ties with family and friends in the comments surrounding each post. It is significant that an archive of this community's rich cultural life was not created by any formal memory institution. By highlighting this lack, *Veteranas and Ruccas* raises broader questions about how memory is created and valued, and how the internet might help reshape these processes. (Quote from the artwork's description on [Rhizome.org Artbase, archive of digital art](#))

As net.art is developed during the early years of the web, it is inherently tied to its community. The net.art community consisted by artists, hackers, techies, and people who wanted to manipulate the protocols and aesthetics of the early Web and develop the Internet as a creative force instead of using it simply as a broadcast channel or a tool for producing art. It was through these communities that net.art's context and form was shaped. Mailing lists, Surfclubs, and Websites defined the organizational structure of the net.art community. Through these digital media channels, net.art participants contributed to an ongoing conceptual conversation around art and the Internet. Online artists followed suit, posting art and criticism with no promise of reward but the opportunity to contribute to a new artmaking paradigm (Ippolito 2002). As Ippolito describes in his Ten Myths of Internet art, "The internet may be a valuable tool for individual use, but it is far more important as a social mechanism."

Sharing was a key point during the early days of Internet art and after the mid-2000s user-friendly social media, sharing has simply become synonymous to being online. Communities after Web 2.0 are being developed in relation to the digital platform's scale and since these platforms are to a great extend mass social media, the Post-Internet art communities are massive and fragmented. More people are now making and sharing content online and they are doing so through a smaller number of channels. Followers and subscribers become participants and observe a continuous accelerated recirculation of Internet culture. This does not mean that the sense of community within Internet art is lost. Acting within a global community is the norm for many social activities in a post-Internet era. It is

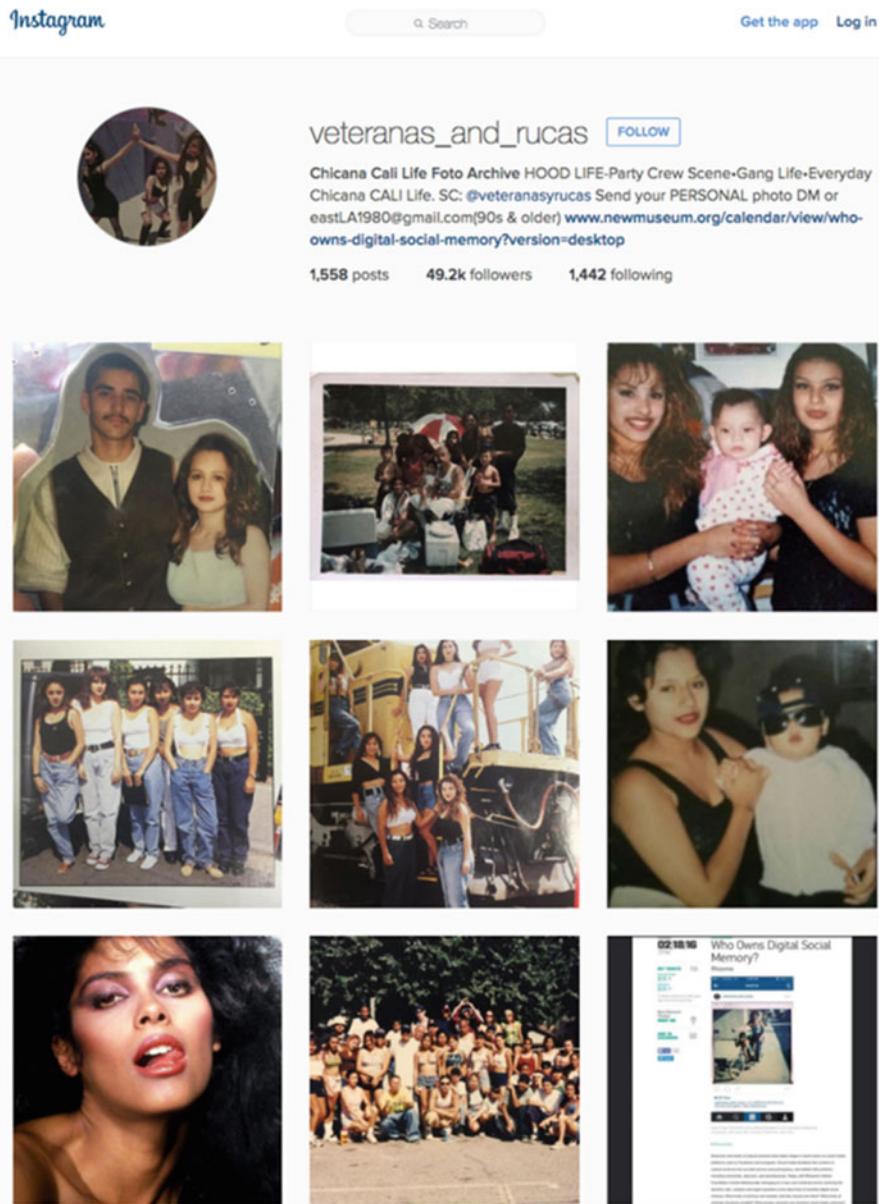


Fig. 4 Retrieved from the artwork's Instagram page

within this global scale that *The Wrong* biennial became a possibility or *Veteranas and Rucas* (Fig. 4) reconnected the Southern California Chicano party crew community.

Mediation

The concept of mediation is applicable to all online activities and interactions. From the “mediated publicness” as described by John Thompson as early as 1995 (Thompson 1995), which is despatialized, it is nondialogical and engages wider and more diverse audiences to a post-Internet condition where mediation becomes part of the “essence” of the experience. A Post-Internet condition that means Internet’s ubiquitination and application to all aspects of life and social activity affects how we perceive our Internet-mediated experiences. With Post-Internet art, the conceptual implications of the artwork’s production and distribution across the Internet become, in turn, the artwork’s most important and intriguing figure. This kind of “mediated” experience is more vivid and more real than the artwork itself. Jeremy Rifkin uses the term “hyper-real” (Rifkin 2001) to describe “digitally mediated” experiences where the symbolic essence out of cultural experience is digitally transformed into make-believe images and forms, which when communicated, seem even more vivid and real than the original phenomena and therefore become the experience.

With net.art’s focus on its constituting technology, a strong sense of medium-specificity has been attributed to it in the McLuhanesque sense of the medium always being an integral part of the message (Silver 1997). The hands-on approach of the early Internet tools net artists used in their art practice and the limitations of what could be transferred through Internet channels signified an unintentional return to medium specificity. With the use of external proprietary platforms of Web 2.0, culture medium-specificity as understood during net.art years becomes less relevant (Olson 2009). Post-Internet artists create artworks with a consciousness of the networks within which they exist. Art becomes an activity consisting in producing relationships with the world with the help of signs, forms, actions, and objects. Post-Internet art is characterized by a collapse of distinction between offline and online identity, viewership and participation, art and everyday activity. The artist functions as an arranger who curates, comments, researches, and archives popular Internet culture circulated on the Web (Stofner 2014). The Internet-related medium (everything that appropriates Internet technology) does not define a specific aesthetic condition; instead, it is all that is being mediated through it (information, experiences, interactions) that becomes the material which forms a post-Internet condition.

Petra Cortright’s artwork *VVEBCAM* (Fig. 5) in 2007 is a YouTube video where the artist is using her cheap web camera to record herself while playing with the special effects built into the webcam. In 2011, the artwork was removed from YouTube because of Cortright’s extensive use of “offensive” keywords. Cortright used an extensive list of 733 tags like Paris Hilton, tits, boobs, vagina, and sex, luring more viewers by creating false expectations. The comments below the original video on YouTube are asking Cortright to “smile more,” telling her she “looks like a hippie stoner” or simply wondering “what am I watching?” *VVEBCAM* is a form of anti-performance for the camera, in a time where people are constantly performing for an audience online, this is a unique role reversal and an opportunity for reflection.

Fig. 5 Still from the *VVEBCAM* video retrieved by the artwork's archived version on <http://rhizome.org/>



VVEBCAM highlights the conditions of watching video online. The passive surveillance of her videoscreen is mirrored by the viewer's own experience at that very moment, who is necessarily also consuming online content as they watch the work...Issues regarding how and where an artwork is displayed online, as well as, the techniques used for its dissemination, are also alluded to in *VVEBCAM'S* original Youtube version...It highlights the conditions of watching video on the Internet, mirroring the passive consumption of online content that the viewer him/herself performs while watching the work. (Quote from the artwork's description on [Rhizome.org](http://rhizome.org/) Artbase, archive of digital art)

Identity

Early Internet artists often created fake websites and identities. This is viewed as an attempt to transcend the symptoms of social divisions (such as the perception of difference as seen through living spaces, personal appearance, and spoken dialect, among others) through the self-representation of user-created online avatars (Troemel 2011). As Web 2.0's profit was primarily founded on exposure to advertising and data mining, a shift toward traditional identification took place. Many online services moved away from their restricted access models and instead started to collect and sell user's habits and data to advertising and marketing firms. The Internet user becomes the everyday person who eagerly created a truthful replica of their identity online for everyone to see and follow (Troemel 2011). This new type of identity is being sustained and curated by activities like posting, reposting, sharing, updating, tagging, and commenting, each a performative display made to elucidate a connection between separate identities for the spectatorship of the assumed audience (Troemel 2011).

Online, every artist has an audience to find. Follower culture makes audience reaching easier and interaction between artists and audiences instant. Effectively artists are treating themselves and their work as brands. The artist becomes a public persona that depends on media exposure and online interactivity. As technological innovations continue to extend our notion of the visible, we now recognize ourselves

Fig. 6 Still from the *A Family Finds Entertainment* video, retrieved by MAD Museum of Art and Design's website



as both the observer and the observed on a constant basis and we understand this as a requirement for belonging. Our identity exists into a mixed condition of physical and digital, both states are equally real and exist as one.

Ryan Trecartin's 2004 artwork *A Family Finds Entertainment* (Fig. 6) can be seen as an experimentation with the hyper-real-mediated condition and mixed identity. This is a film with cheesy video special effects, dress-up chess costumes, desperate scripts, and "after school special" melodrama combine in the fluency of youth-culture lingo, reflecting a generation both damaged and affirmed by media consumption. (From the artist's website description of the artwork.)

Trecartin's characters, like the modern-day technophiles they satirise, are umbilically linked to their Blackberries. They also play to camera constantly, anxiously aware that their performances are being filmed, recorded, broadcast: self-awareness always leads to self-promotion. The 'real' world of people in space in time is secondary to the virtual afterlife of these acts. Trecartin's characters aspire to be images... His artwork animates the ongoing dialogue between identity and technology. The love/hate nature of this relationship arises from the mix of liberty and alienation that it affords (our world is getting faster, brighter, better; our world can feel disorientating, overloaded with information) and which, with the invention of the Internet, entered an era of unparalleled anxiety and opportunity... Identity is presented as a form of fancy dress: try a new self, and as soon as it gets boring try another. (Langley 2012)

Artist Erica Scourtis wrote a diary page using Gmail and then sent it out to herself every day for a year. Using her webcam, she filmed the series of suggested keywords and the links to groups of relevant ads. By creating a Gmail diary, Scourtis is aware that Google will "read" her private pages and she tries to present the connection between the human and the algorithmic diaries and therefore between two possible "self-narratives." The artwork, called *Life in AdWords* (2012–2013) (Fig. 7), is a 70-minute video where the artist recites strings of "adwords."



Fig. 7 Still from *the Life in Adwords* video, retrieved by California College of the Arts' YouTube channel

Her language is algorithmic, having been sourced from the targeted ads that appeared when she regularly emailed her diary entries to herself. Between the words selected by Google AdWords and the footage onscreen, the viewer patches together her own narrative. (Packard 2015)

Spatiotemporality

Internet's implications with our understanding of space and time stem from its socio/technical characteristics like global interconnectivity, time flexibility, virtual reality, and ubiquitousness. Traditionally, time and space is presented in two interrelated concepts, the global and the private. The global concept of space and time can be equated with the multidimensional manifold in which all activity occurs, or processes unfold. The private space-time concept is understood from the point of view of the agent and its characteristics relate to activity like the distances depending on the effort to reach a destination (Tanasescu 2008). As global and private processes are blended through an extended public sphere as discussed in the section "[Public Sphere and Community](#)," the distinction between the two becomes invisible. At the same time, proximity of distance is being reflected through online presence which is understood as activity in virtual mixed-reality spaces. Internet's instantaneous speed acts as an alternative to physical movement, and conceptions of past, present, and future are being understood in relation to the data linked to online activity. Socially-mediated moments and memories are tangled in the mediated spatiotemporality of the Internet.

Artist Hito Steyerl, in "Too Much World: Is the Internet Dead?" (Steyerl 2013) writes: "The Internet persists offline as a mode of life, even if we were to unplug and

then leave the Internet behind, it would remain with us; it has already ‘crossed the screen, multiplied displays, transcended networks and cables to be at once inert and inevitable.’’’ The inevitability of the Internet’s ubiquitousness permeates and dominates our lives and culture. The medialization of space and time through Internet technologies is a fundamental change that leaves its mark on the ways we process and order the pace, sequence, rhythms, and of social reality. The artworks produced by Internet artists today reflect these conditions not only in terms of their themes and context but also in terms of their mode of existence. Artists’ choices about the nature of the artwork (online performance, video, website, application, social media account, etc.), the exhibition of the artwork (where the artwork lives and how it is being presented), the documentation of the artwork (evidence of its existence like stills, images, videos), the interaction of the artwork (comments, views, followers, likes), all leave traces of data so massively distributed through the networked systems of information within an extended public sphere that escape any previous understanding about where and when an artwork lives. Internet artworks fit online repositories and taxonomies through keywords and tags. These processes defy our perception of control over artistic production. At the same time, the artworks produced through these processes become Internet’s historical archive.

Conclusion

Internet art’s evolution in relation to Internet’s developments exposes the new processes and conceptual shifts that effect our contemporary conditions. Contemporary Internet art brings art to the main scene of cultural production, the Internet. Post-Internet art does not simply reflect the aesthetic of online culture but it examines every aspect of social activity that is being transformed by Internet technology. The Internet is a mass and ubiquitous medium now and its implications in our lives are so much more prevalent today that Internet art becomes more relevant than ever before.

Post-Internet art offers a critical examination of the very nature and conditions of living with and after the Internet. From investigating the extended public sphere and the forming of communities via social media interactions to criticizing the mediated processes of art production and distribution online, and from exploring the performative and hyper-real identity formations to reflecting on our mixed-reality notions of space and time, Internet art is the purest form of experimenting with the Internet. Internet art offers a conceptual and critical artistic practice that explores and questions the important and massive effects Internet has in our lives. Ultimately, Internet art is a unique cultural product of contemporary life with the Internet, which responds to the need for new forms of expression and new artistic practices to address the most urgent questions of our time, and so it becomes an important and promising field of interdisciplinary research that offers unique opportunities to deep dive into the elusive aspects of our reality and to imagine Internet futures.

References

- Barber S (2014) Dina Kelberman's I'm Google. Art21 and Cue Art Foundation
- Bishop C (2012) Digital divide. ARTFORUM
- Bosma J (2003) *The Dot on a Velvet Pillow*. Museum of Contemporary Art, Oslo
- Brethauer D (2001) *Open Source Software: A History*. University of Connecticut, Storrs
- Connor M (2013) What's Postinternet got to do with Net Art. Rhizome.org
- Connor M (2016) Speaking in net language: my boyfriend came back from the war. Rhizome
- Clusterduck Collective (2018) *Internet Fame Exhibition*. The Wrong Biennale
- Greene R (2004a) *Internet Art (World of Art)*. Thames & Hudson, London/New York
- Greene R (2004b) Interview. The Guardian [Interview]
- Halsey H (2016) Amalia Ulman: excellences and perfections. Jungle Magazine
- Ippolito J (2002) Ten myths of Internet art. Leonardo, Oakland, Vol 35, pp. 485–487 , 489–498
- Langley P (2012) Ryan Trecartin: the real Internet is inside you. The White Review
- Lichty P (2016) The wrong biennial: the wrong project that's so right – a metacritique. Furtherfield.org
- Manovich L (2001) Post-media aesthetics
- McHugh G (2011) Post Internet. Notes on the Internet and art. Link Editions, Brescia
- Olson M(2006, 15 September). Net results [interview]
- Olson M (2009) Conference report: NET.ART (SECOND EPOCH). Rhizome
- Packard C (2015) The real-life applications of “Post-Internet” art. Hyperallergic
- Richert JLL (2015) The materialization of the Internet art object: the evolution of Internet art and its contemporaru market
- Rifkin J (2001) Age of access: the new culture of hypercapitalism, where all of life is a paid-for experience (Jeremy P). Tarcher/Putnam
- Shulgın A (1997) *Nettime*
- Silver D (1997) Interfacing American culture: the perils and potentials of virtual exhibitions. Am Q 49(4):825–850
- Stallabrass J (2003) Internet art. The online clash of culture and commerce. Tate Publishing, Londres
- Steyerl H (2013) Too much world: is the Internet dead?. *e-flux*, Issue 49
- Stofner L (2014) Post-Internet-Art: Moderne Archäologie? Eine Bestandsaufnahme zum Einfluss der Digitalisierung auf die Gegenwartskunst. BA Thesis, Universitat der Kuenste Berlin
- Tanasescu V (2008) Spatiotemporal metaphors and Internet technologies. FIS 2008 Symposium, Vienna
- Thomspson J (1995) The media and the modernity: a social theory of the media. Polity Press, Cambridge
- Troemel B (2011) Peer Pressure. Link Editions, Brescia



Logics and Legacy of Anonymous

9

E. Gabriella Coleman

Contents

The Formation and Mutations of Anonymous	148
The Logics and Legacy of Anonymous	158
Conclusion	163
References	165

Abstract

Since 2010, digital direct action, including leaks, hacking and mass protest, has become a regular feature of political life on the Internet. This chapter considers the source, strengths, and weakness of this activity through an in-depth analysis of Anonymous, the protest ensemble that has been adept at magnifying issues, boosting existing – usually oppositional – movements, and converting amorphous discontent into a tangible form. It has been remarkably effective, even though it lacks the human and financial resources to engage in long-term strategic thinking or planning. This chapter covers the different historical phases of Anonymous in order to examine its logic, the sources of its geopolitical power, and its legacy.

Keywords

Anonymous · Direct action · Hackers · Hacking

In 2012, Obama's reelection campaign team assembled a dedicated and talented group of programmers, system administrators, mathematicians, and data scientists to develop software that would help the incumbent president secure a second term.

E. G. Coleman (✉)

McGill University, Montreal, Canada
e-mail: gabriella.coleman@mcgill.ca

Used for fundraising, the system also crunched and analyzed data to fine-tune voter targeting with the hope of giving the campaign a critical edge over Republican presidential candidate Mitt Romney. After clinching a second term, journalists praised this technical team's hard work, success, and travails – heralding the system a stellar success.

The media, however, did not touch upon one of the team's primary concerns. The Obama team sought – at all costs – to avoid attracting the attention of Anonymous, a banner used by individuals and groups to organize diverse forms of collective action, ranging from traditional street demonstrations to gumming up websites and most famously, bold acts of hacking. The Obama campaign team treated Anonymous as (potentially) being even more of a threat than the foreign state hackers who had infiltrated the McCain and Obama campaigns in 2008 (Todd 2008). If Anonymous had successfully accessed servers, it would have ignited the sort of media scrutiny that could have battered the campaign's reputation. Although this alone would not likely have jeopardized Obama's chances for reelection (his team, I was informed, were confident that there was no controversial information to leak), a visit from Anonymous was considered a real possibility and liability.

For much of its reign, a paradox has been at work with Anonymous: state-supported hacking is generally much better organized and funded, and in some respects still far more powerful than actions undertaken by Anonymous. Stuxnet is a perfect example. Developed by the Israeli and American governments, this state-of-the-art malware was used to disable Iran's capacity to produce enriched uranium (Zetter 2014). While Anonymous once boasted they had access to Stuxnet code, which it was going to release, the media debunked this claim and identified it as a hoax (Nguyen 2011). Anonymous lacks the human and financial resources to engage in the long-term strategic thinking or planning required to code military-grade software. It has neither the steady income nor the fiscal sponsorship to support a dedicated team tasked with recruiting individuals, coordinating activities, and developing sophisticated software.

Wherein, therefore, lies the power of Anonymous? How has it managed to strike such fear into corporations, governments, and other groups, such as the Obama campaign team, and accomplish its objectives? This piece addresses the various sources behind Anonymous's geopolitical power: its ability to land media attention, its bold and recognizable aesthetics, its participatory openness, and the misinformation that surrounds it. One feature stands out in this mix: Anonymous's unpredictability.

Take, for example, its birth as an activist endeavor. Before 2008, the name Anonymous was deployed almost exclusively for “trolling,” which in Internet parlance means pulling pranks targeting people and organizations, desecrating reputations, and revealing humiliating or personal information. Anonymous trolling, often coordinated on the image board 4chan.org, was carried out in the name of “the lulz,” that is, “the laughs.” Anonymous accidentally – although dramatically – enlarged its repertoire of tactics in 2008, when it first sprouted an activist sensibility. The transformation first unfolded during the course of a legendary pranking

campaign against the Church of Scientology and by 2010, distinct and stable activist nodes of Anonymous subsequently hatched. The name Anonymous was increasingly being used to herald progressive actions, often in ways that defied expectations. By 2011, the name ceased to be used for unalloyed trolling.

As Anonymous enlarged its scope of activity, mutability and dynamism continued to define its activism and historical trajectory. As a result, it made it difficult to forecast when or why Anonymous would strike, when a new node would appear, and whether a campaign would succeed. A by-product of the Internet, Anonymous historically rose up most forcefully and shored up the most support when defending values associated with this global communication platform, such as free speech. As one Anonymous participant put it during an interview, “free speech is non-negotiable.” But Anonymous has repeatedly demonstrated that it is not bound to this or any other imperative. Over the last 5 years, Anonymous has contributed to an astonishing array of causes, from publicizing rape cases in small-town Ohio to aiding in the Arab and African Spring of 2011.

Despite media reports to the contrary, Anonymous is not random, shadowy or chaotic, although it certainly is nimble, flexible and capricious. Anonymous may be devilishly unpredictable and difficult to study, but it still evinces core and stable logics – attributes to be discussed in this chapter. Further contextualizing Anonymous in light of global currents over the last few years, it is rather unsurprising that a fiery protest movement, often wedded to the Internet, arose when it did and in this particular form. Anonymous also glimmered most intensely between 2011 and 2015, during a tumultuous period of global unrest and discontent, evident in the large-scale popular uprisings across the world: the 15-M movement in Spain, the Arab and African Spring, the Occupy encampments, the student movement in Chile, Black Lives Matter, and the Umbrella movement in Hong Kong. Its entanglement with some of these broader social causes was recently commemorated after the untimely death of Erica Garner – an anti-police brutality activist whose father, Eric Garner, had also met an untimely death literally at the hands of a NYPD police officer whose illegal chokehold strangled him. Not long after her passing, the person fielding her Twitter account paid their respects to Anonymous, who had earlier paid theirs to Erica Garner: “Shout out to Anonymous... One of the first groups of people that held Erica down from jump street. She loved y'all for real #opicanbreath” ([officialERICA GARNER @es_snipes 2018](#)).

This chapter is divided into two main sections. The first provides a fairly straightforward narrative account of Anonymous from 2005 to 2017, homing in on major events and turning points with an eye toward the dramatic metamorphosis Anonymous underwent in this period from wrathful trolls to the sort of progressive activists who were paid tribute to after Erica Garner’s death, and ending with its waning visibility in the English-speaking world after 2015. This chronology is necessary given Anonymous’s chameleon nature and the high degree of misinformation surrounding it. The second section considers the core features of Anonymous, which will shed light on its political significance, logics, and legacy.

The Formation and Mutations of Anonymous

Associated today with hacktivist, social movement or vigilante causes, between 2005 and 2010, Anonymous was, “more about entertainment than advocacy” as media scholar Jessica Beyer aptly described them (2014: 27). The particular species of entertainment Anonymous specialized in included the creation of humorous and family-friendly content (think adorable cat memes), along with the sort of grotesque and gruesome material that, upon viewing, might make your blood curdle (let’s not even go there). One of their other specialties was Internet trolling; whether light-hearted or gruesome, propelled by an anonymous horde or delicately masterminded by a few individuals, trolling almost always entails an unpredictable combination of trickery, defilement, and even cruel torment (Phillips 2015).

While trolling can be accomplished by a single individual, or a tight-knit racist trolling association, Anonymous-style trolling was more chaotic, freewheeling, organic, and swarm-like, qualities influenced by the infamous anonymous image board 4chan where trolls congregated. Originally charted in 2003 by Christopher “moot” Poole to discuss Japanese-themed issues like anime, one of its most distinctive technical features is anonymity: every post is stamped with the very same exact name “Anonymous” and from this configuration a meta-identity around and ethical commitment to anonymous eventually coalesced. This “anonymous interface” as Lee Knuttila describes it, “lowers personal responsibility and encourages experimentation.” (2011). The board’s popularity and size ballooned in tandem with its notoriety, which followed wave after wave of trolling unleashed there with Anonymous taking credit. Indeed, by 2007, Anonymous was so well known for trolling that Fox News anointed it the “Internet hate machine.” Anonymous mockingly embraced this hyperbolic title, no doubt thrilled at having gotten under the media’s skin.

If the Fox News report, one the one hand, reflected the media’s and by extension the public’s growing awareness of Anonymous, it also helped fuel and power the trolls – a media feedback loop more or less on auto-play throughout the different iterations of Anonymous, a point made by Whitney Phillips in her groundbreaking account that covers the tight symbiosis between contemporary trolls and sensationalist media outfits like Fox News (2015). “With Fox News leading the charge,” Phillips observes, “trolls were given a framework upon which to build to their public face.” (2015: 61). Soon after the Fox News coverage, someone used the name Anonymous to release a video directed back at the right-wing media establishment, a grim parody drawing on Hollywood slasher flicks. The video proclaimed Anonymous as “the face of chaos” that “laughs at the face of tragedy” (Anonymous 2007) and captured trolling’s terrifying potential, especially for those who aren’t in on the joke.

Six months after being labeled the “Internet hate machine,” the name Anonymous and its associated iconography (headless people in black suits) were used first to troll and to everyone’s surprise, subsequently organize earnest street demonstrations against the Church of Scientology. Trolling kicked off in January 2008, spurred by the infamous internal recruitment video of Tom Cruise praising the Church’s efforts to “create new and better realities.” The video, leaked by critics of the Church,

promptly went viral. When Scientology threatened Gawker and other news organizations with legal action if they did not remove the video, Anonymous initiated what even today is considered by Anonymous to be one of their most memorable raids. Impelled by the lulz, Anonymous launched distributed denial of service (DDoS) attacks to jam Scientology websites, ordered unpaid pizzas and escorts for Scientology churches across North America, faxed images of nude body parts to churches and relentlessly phone pranked the Church, in particular the Dianetics hotline (where callers can get advice about the “first truly workable technology of the mind”).

Within a matter of weeks, pure trolling receded and gave way to Project Chanology, an ardent and earnest political campaign against the Church of Scientology, which continues to this day. Various forces and factors unexpectedly converged to ignite this metamorphosis. One inspiration was a viral video produced by Anonymous calling for the “systematic dismantling of the Church of Scientology” (Anonymous 2008). Although the video was intended as a joke (that is, for the lulz), it sparked a lively and heated debate about whether Anonymous – a pure trolling shop at the time – should purposively protest the Church or remain faithful to its madcap roots. Enough individuals were willing to move forward with the proposal, and on February 10, 2008, over 7000 individuals protested in 127 cities from Sydney to Buffalo. Many demonstrators sported the plastic Guy Fawkes mask for pragmatic reasons alone: they sought cover from the prying eyes of Scientology adherents who were snapping high definition photographs of protesters. Since then, the mask has remained Anonymous’s signature icon.

Although the demonstrations were well organized and hailed by participants as a triumph, many of the initial league of protesters knew little about Church of Scientology and its abuses, at least outside of what they might have learned from South Park’s lampooning of the Church. Many were driven to the streets by a combination of mischief and curiosity. Since the image board 4chan, where much Anonymous activity had hatched, is anonymous and discourages even the use of pseudonyms (persistent nicknames and identities), many Anons simply showed up to mock Scientology – a culturally revered pastime on the Internet and beyond – and for the rare opportunity to meet their anonymous brethren. Many did not identify as activists nor did they have any intention of becoming ones. Nevertheless, enough of the initial trolls switched camps and carried on with the demonstrations to help constitute Anonymous as an activist enterprise; copious media coverage (a common feature in the history of Anonymous) also secured the ongoing life of Anonymous as medium for political organizing.

Although many participants, especially the die-hard trolls, contested Anonymous’s newfangled political prospects, enough of the Anon-activists nourished what was then a fragile activist sensibility that also included some pranking and trickery – though now aligned with a political purpose. Nevertheless, in 2009 and 2010, Anonymous’s actions were variably connected with Project Chanology or trolling. Some people participated in Project Chanology’s efforts at to lambast the Church of Scientology solely online, engaging in boisterous discussions on the popular web forum WhyWeProtest. Others, especially

those living in or close to major cities across North America and Europe, showed up at monthly street protests rain or shine (or snow) to mercilessly taunt Scientology adherents and air its human rights abuses. These burgeoning activists were supported by a small cadre of longtime Scientology critics and defectors, some of whom started to identify as Anonymous. Some of these defectors hailed Anonymous as the “game changer” that enabled them to be open and public about their ordeals with the Church (Christman 2012).

During this period, Anonymous branched out politically. For instance, some of the core Chanology organizers contributed to Iran’s fervent (though unsuccessful) Green revolution. In 2009, denizens of 4chan were still using the name Anonymous for notorious trolling escapades. Trolling, nevertheless, began to wane in 2010 just when Anonymous’s political portfolio diversified considerably and by 2012, pure trolling under the name Anonymous had largely ceased; rumor has it that trolls advised their cohort from ever using a name – even a name like Anonymous – that could be appropriated by do-gooders.

In February 2010, individuals coordinated “Operation Titstorm,” a DDoS attack lobbed against the Australian government to protest legislation aimed at curbing pornography by requiring Internet service providers to use filters. “No government should have the right to refuse its citizens access to information solely because they perceive it to be unwanted,” declared Anonymous in an email sent to the press. “The Australian government will learn that one does not mess with our porn. No one messes with our access to perfectly legal (or illegal) content for any reason” (quoted in Cheng 2010).

The political use of a DDoS attack – directing so much traffic toward a website so as to freeze it – placed Anonymous in a camp alongside earlier “hacktivists” like the Electronic Disturbance Theatre (EDT), which had hosted “virtual sit-ins” in the late 1990s (Jordan and Taylor 2004; Sauter 2015; Vlavo 2018). In 1997, for instance, the EDT flooded Mexican government websites to support the Zapatistas’s struggle for autonomy. While Anonymous had initially deployed DDoS attacks during their initial first trolling raid against the Church of Scientology, Project Chanology abandoned this tactic. It never approved of nor relied much on hacking. To this day, Project Chanology opposes the use of DDoS attacks and tends to dismiss the networks that deploy them. To acknowledge its internal feuds and sectarianism, Anonymous eventually adopted the refrain “Anonymous is not unanimous.”

In September 2010, 7 months after “Operation Titstorm” (and 2 years after venturing into the world political activism), a new node hatched following a rift over protest styles. Organizing in the name of Internet freedom, a group of Anons had set their eyes on protesting the multilateral Anti-Counterfeiting Trade Agreement (ACTA) through legal channels alone. A handful of the group clamored for direct action tactics, which included “black fax, emails, phone calls, pizzas called to the office, a full on classic Anon assault,” as one participant described it to me. In the minority, they were banned from a particular Internet Relay Chat (IRC) server but naturally could still use the name. So they did, and proceeded to “blitz these guys [copyright industry] into paying attention” by DDoS-ing pro-copyright associations such as the Motion Picture Association of America in defense of piracy and file sharing.

This group eventually managed to attract a sizable street team of participants and supporters. After roaming from one IRC network to another, in November 2010, these participants eventually established a dedicated IRC server named AnonOps. This network, known by the name of its IRC server, would come to boldly embrace DDoS tactics and eventually endorse hacking as a political weapon, thus becoming one of the biggest and most controversial media sensations in 2011. But by early December 2010, however, AnonOps IRC chat rooms, once bustling with activity, became more like a ghost town; activity had screeched to a halt. Core AnonOps participants – system administrators, organizers, media makers, and hackers – were concerned by its dwindling number of supporters. Then, nearly overnight, on December 9, 2010, the number of supporters skyrocketed. AnonOps managed to tap into, channel, and thus render visible the collective furor over what its supporters deemed to be a wholly inappropriate act of censorship against the whistle-blowing organization WikiLeaks, which had caused a firestorm of controversy after releasing a trove of leaked classified diplomatic cables. Anonymous, specifically AnonOps, launched a DDoS campaign aimed at PayPal, MasterCard, and Visa in response to their refusal to accept donations for WikiLeaks' front man, Julian Assange.

The technical work of jamming website access was coordinated by a select number of participants using botnets (a large network of compromised computers). Many other individuals contributed using a tool known as Low Orbit Ion Cannon (LOIC). An open source application available for download on the Internet, LOIC allows users to contribute to a DDoS campaign. LOIC lacked privacy protections, however, and participants were not consistently informed that they would be put at legal risk unless they took extra precautions to hide their IP addresses (eventually, 14 individuals, now known as the PayPal 14, would be arrested in the United States in mid-July 2011 over alleged participation in these events). This mass participation may not have been technically necessary, and it was certainly ethically dubious. Nevertheless, it revealed to the world at large the level and scope of supporters' disenchantment with what they saw as unacceptable corporate censorship and offered them a powerful platform from which to speak. "When used by political activists, disruptive tactics like DDoS actions," notes Molly Sauter in their book on the history of this tactic, "can act as power levelers: they enable activists to funnel media and public attention to unnoticed causes and events, and as direct action tactics DDoS actions allow activists to translate their political speech into an action which demands a response." (2015: 147).

This gathering was also one of the first large-scale spontaneous online demonstrations. The outpouring of support even surprised core members of AnonOps. Numbers on the IRC chat room dedicated to the operation jumped from 70 individuals to 7000 in a couple of days (a fraction were also bots). As one participant explained, this left AnonOps "stunned and a little frightened." The targeting of WikiLeaks was yet another catalyst for politicizing Anonymous; some key participants and organizers active today jumped aboard at a momentous time.

By 2011, both Anonymous and WikiLeaks were recognized as staunch – albeit controversial – advocates for free speech. Both were ready to pounce into action, in distinct ways, in the face of censorship. Prompted by the Tunisian government's

blocking of WikiLeaks, on January 2, 2011, AnonOps released a video launching OpTunisia. The campaign was initially spearheaded by one person, who corralled a group of participants, some of whom became moderators (they helped “keep order” on the public IRC channel by keeping the conversation on-topic and kicking trolls off the channel). A technical team of hackers attacked Tunisian government websites and undermined software the dictatorial regime was using to spy on citizens. Many others aided by translating information, writing manifestos and crafting publicity videos.

Although Anonymous initially intervened to stamp out censorship, the same team continued to lend a helping hand as countless countries in the Middle East and North African region underwent revolution. Individuals organized in a dedicated AnonOps chat room, and the operations became collectively known as the “Freedom Ops,” attracting left leaning participants some of whom had extensive experience participating in revolutionary politics or other social movements. For several months, they teamed up with local activists and hackers in Libya, Egypt, Algeria, and Syria.

Anonymous had become multitudinous, prolific, and unpredictable; by this time, it qualified as the latest and most potent instantiation of what media scholar Marco Deseriis (2015) has theorized as a multiple use or improper name. What distinguishes an improper name from other political symbols is its radical availability, at least in theory, to everyone, and thus its propensity to circulate so pervasively. Improper names, like Luther Blisset (created by Italian activists in the early 1990s), Captain Ludd (a figure and name conjured into being by the Luddites to lay claim to actions), or Anonymous, have a propensity to spread and at times, mutate as these names, by definition, reject the idea of ownership. This openness makes improper names subject to “unforeseen appropriations,” a dynamic evident in the surprising causes – rape culture and terrorism – that would eventually be taken up in the name of Anonymous.

But in January 2011, AnonOps remained focused on aiding social movements and fighting censorship. The IRC network housed dozens of distinct chat channels for other ongoing operations to support the environment, student movements in Latin America and WikiLeaks, among other causes. Teeming with explosive activity, it was impossible for one person to stay abreast of all the developments. Barely a week went by without some notable Anonymous operation placing them in the media spotlight and then augmenting their reach with what amounted to free publicity.

Then, early in February 2011, an impromptu operation prompted by revenge – targeting the corporate security firm HBGary – once again dramatically reconfigured the political possibilities of Anonymous. Hacker participants transitioned from covert to public forms of hacking, such as website defacing. Hacking, always a weapon but often used clandestinely, became a public act – and publicized act – wielded for multiple purposes: vengeance, lulz, turf protection, technological assistance, theatrics, exposing security vulnerabilities, and eventually searching for information to leak.

Much like the formation of Chanology, the transition to deploy *and* advertise, often with much fanfare, acts of hacking wasn’t planned. It followed from a

spontaneous act of revenge prompted by the actions of Aaron Barr, CEO of the HBGary federal security firm. Barr boasted that his firm had compromised Anonymous, claiming to a reporter that it had allegedly discovered the real identities of top operatives and was ready to hand them over to the FBI; a spreadsheet of names had been found and circulated online. In response, designated AnonOps crews took the initiative to locate security vulnerabilities on HBGary servers and search for information to leak. A small group of hackers commandeered Barr's Twitter account. They hacked HBGary servers, downloaded 70,000 emails, and deleted files. They purportedly wiped out Barr's iPhone and iPad, and then published the company's data alongside Barr's private communications. The following cocky rationale was sent and published by a reporter for the Tech Herald, who had covered their actions for many months:

Let us teach you a lesson you'll never forget: you don't mess with Anonymous. You especially don't mess with Anonymous simply because you want to jump on a trend for public attention. You have blindly charged into the Anonymous hive, a hive from which you've tried to steal honey. Did you think the bees would not defend it? Well here we are. You've angered the hive, and now you are being stung. It would appear that security experts are not expertly secured. (quoted in Ragan 2011)

Anonymous unearthed a damning document entitled "The WikiLeaks Threat," which outlined how HBGary, in conjunction with the U.S. Chamber of Commerce, Palantir Technologies, and other security companies, could undermine WikiLeaks by submitting fake documents to the organization. Anons also found evidence of plans to tarnish the reputations of WikiLeaks supporters, including journalists such as Glenn Greenwald.

Celebrated by Anonymous at large for restocking the lulz, this operation inspired a team of technological elites to break away and devote themselves to the pursuit of mischief, unambiguously proclaimed in their choice of name: LulzSec. "When you get over nine thousand PM's [private messages on IRC] asking to help in some random 'op'" explained one member, "it's a case of the hell with this, I want to go have some fun." Although the press usually equated LulzSec with Anonymous, the hacker crew attempted to distance itself from the larger collective due to their freewheeling attitude and their indiscriminate choice of targets. In contrast to Anonymous, for instance, LulzSec went after the press, who had been totally off limits, even among the networks such as AnonOps that favored illegal direct action tactics.

With constant news coverage detailing their 50-day spree, hackers and hacking groups became the public (and notorious) face of Anonymous, even if other non-hacking operations were ongoing and LulzSec had, for the time being, proclaimed its independence from Anonymous. On May 13, 2011, LulzSec declared on Twitter: "Must say again: we're not AnonOps, Anonymous, a splinter group of Anonymous, or even an affiliate of Anonymous. We are #Lulzsec: D" (LulzSec 2011). Although LulzSec and Anonymous shared common principles, cultural referents, and even some personnel, there was still enough ideological distance between the two that many Anons, along with security professionals, geeks,

activists, and hundreds of thousands of Twitter followers, either seemed to genuinely enjoy their antics and support them or were at least compelled enough to watch the wild show LulzSec put on as it targeted PBS, Fox News, Sony Pictures, and EVE Online, along with dozens more.

This small crew of hackers, embroiled in their own dramas, eventually retired on June 25, 2011, but some of its members subsequently banded and rebranded under “Operation Antisec.” Unlike LulzSec, Antisec loudly and proudly labeled itself as Anonymous. While not forsaking deviant humor (which had been a core feature of LulzSec’s public persona), Antisec adopted an unmistakably militant tone. This was largely attributable to two hackers: Jeremy Hammond, a political radical who is currently serving a 10-year jail term, and Hector Xavier Monsegur, known as “Sabu,” who was eventually outed as an FBI informant. Soon after being arrested on June 7, 2011, Sabu also cooperated with law enforcement as an FBI snitch. Soon after, while secretly working for the G-men, he also became the public face of Antisec through his popular Twitter account, where he specialized in 140-character tirades against the group’s main targets: the government, security firms, the police, and corporations.

While Antisec was busy at work over the summer of 2011, several stable and distinct entities were operating simultaneously: AnonOps; Chanology; Cabin Cr3w (a small team that had formed, in part, to poke fun at Antisec, but that conducted its own legal and illegal operations); a new network known as VoxAnon (which initially formed in opposition to AnonOps); as well as regional networks in Brazil, India, Peru, Spain, and elsewhere.

With few exceptions, journalists singled out Anonymous-led hacking as if this collective of collectives was solely helmed by hackers. Indeed, hacking became a convenient shorthand to describe Anonymous’s activities; however, many of Anonymous’s operations, past and present, have little to do with computer intrusion. Anonymous’s effectiveness stems in part from its tactical diversity, including its ability to shame individuals and organizations. Operation BART (OpBart) provides a striking case. Once again, Anonymous took action in response to an act of censorship; in August 2011, the San Francisco Bay Area Rapid Transit (BART) decided to disable mobile phone reception on station platforms in order to thwart planned protests against police brutality. Anonymous naturally publicized the well-attended street demonstrations they helped organize. A couple of individuals also hacked into BART’s computers and released customer data in order to garner media attention. An illicit, seminude photo of BART’s official spokesperson, Linton Johnson, was republished on the “bartlulz” website, with the following brazen rationalization: “If you are going to be a dick to the public, then I’m sure you don’t mind showing your dick to the public.” (“Bartlulz”).

Soon after OpBart, activity on AnonOps once again died down. Its IRC network was often taken offline by a rogue hacker’s DDoS attack. In the fall of 2011, many Anons turned their attention to the Occupy protests sweeping North America and Europe. Even before Occupy officially began on September 17, 2011, Anonymous had churned out many videos and images, essentially acting as an informal – but vital – PR wing of the movement and drumming up support. Some Anons chose to

encamp with the protesters, while others provided technological assistance. At the camps, individuals without any prior connection to Anonymous's Internet-based networks sported plastic Guy Fawkes masks.

In the winter of 2011–2012, Anonymous's online activity roared again. In late December, Antisec announced that it had hacked the global intelligence firm Stratfor. Initially, the crew swiped customers' credit cards to donate to charities – à la Robin Hood – in honor of "Lulzmas," and eventually handed off company emails to WikiLeaks. By this time, a number of Twitter accounts, such as Your Anonymous News, AnonyOps, and AnonymousIRC, had amassed hundreds of thousands of followers. The largest, Your Anonymous News, currently has over one million subscribers and at the time, roughly 25 individual contributors. This trend demonstrates that while Anonymous relies on the media to amplify its actions and amass support, it is not wholly dependent on corporate media to get word out or issue calls to action.

The Stratfor affair was followed by a flurry of participatory protest activity between January and March 2012. This activity largely emanated out of AnonOps and VoxAnon, with wide support on Twitter and other forums. First, there were protests against a looming copyright bill, the Stop Online Piracy Act (SOPA), the passage of which unraveled due to a massive and elaborate outpouring of dissent. The linchpin was a "Blackout Day," a Web-based protest of unprecedented scale. By raising awareness about SOPA and publicizing the Blackout Day, Anonymous's contribution was notable. On January 17, 2012, nonprofits, some prominent Web companies, public interest groups, and thousands of individuals temporarily removed their websites from the Internet to voice their opposition to the bill. Thousands of citizens called or emailed their political representatives to voice their concerns.

The next day, federal authorities orchestrated the takedown of the popular file-sharing site MegaUpload. The company's controversial founder, Kim Dotcom, was arrested. Anonymous activists were outraged at the government's preemptive take-down of this popular website; it seemed to confirm that if bills like SOPA became law, Internet censorship would become commonplace. Although Kim Dotcom had not yet been found guilty of piracy, his property was confiscated and his website shut down.

In the wake of these events, Anonymous coordinated its largest DDoS campaign to date. This time, it did not reach out to the public at large to take part; it relied on its own (or rented) botnets. Anonymous targeted a slew of websites, including the homepages of Universal Music, the FBI, the US Copyright Office, the Recording Industry Association of America, and the Motion Picture Association of America, all of which experienced downtime.

Anonymous reappeared in Europe a few weeks later, as massive on – and offline demonstrations were unfolding to protest ACTA, another international copyright law. After the Polish government agreed to ratify ACTA, Anonymous took down a slew of government websites and publicized the street protests that were sweeping Krakow. Soon after, as part of a self-conscious publicity stunt and with no connection to Anonymous groups, members of the left-leaning Palikot's Movement party

concealed their faces with paper-cut-out Guy Fawkes masks during a parliamentary session to protest ACTA; this was the first and since only time this icon was displayed in government chambers. The European Union scrapped ACTA in July 2012.

On March 5, 2012, the FBI raided and arrested one of the core Antisec hackers, Jeremy Hammond. The very next day, Fox News broke the story that one of the most prominent Anonymous hackers, Hector Monsegur, known simply as Sabu, had been working undercover, around the clock, as an FBI informant subsequent to his arrest in June 2011. This confirmed the long-standing suspicion that informants had infiltrated Anonymous and that Antisec had at least partly been manipulated by government interests. Mistrust, which had always hung over the Anonymous networks, began to give way to a bleaker, ominous paranoia. Many wondered whether this would put an end to Anonymous. Shortly after, over the summer of 2012, Anonymous-led activity picked up again with a flurry of international ops. OpQuebec, which defaced provincial police websites, gained momentum in May 2012 after the passage of Bill 78, a law curtailing protest activity. Organized in June 2012, OpIndia rallied on the streets; activists took down a state-owned ISP website for blocking file-sharing sites. In early 2013, Anonymous hackers, ditching the name Antisec, once again initiated a string of web defacements and hacks, this time in memory of the activist and hacker Aaron Swartz. Many believe that Swartz committed suicide due to his ongoing legal battles with the American Department of Justice and the prospect of facing decades in jail for downloading a large cache of academic journal articles from JSTOR, the scholarly archive.

During this period, a relatively new tactic developed by Anonymous – hacking for the sake of procuring documents to leak – slowly transformed from prototype to paradigm, especially when international Anonymous cells and hacktivists unaffiliated with – though inspired by – Anonymous adopted it (see Coleman 2017a for a longer history of this tactic). Two of the most notable examples were hacks and leaks by Lulzsec Peru in 2013 and a hacker (or group) going by Phineas Fisher in 2014 and 2016.

One of the more prolific crews, LulzSec Peru, carried out dozens of operations, including commandeering the Twitter account of Venezuela President Nicolas Maduro and hacking documents from the Chilean Air Force. Their most momentous hack materialized on February 11, 2014, when they publicly released email evidence of Peruvian government corruption. As reported by Frank Bajak of the Associated Press, the leaked emails from the Peruvian Council of Ministers network sparked a “national uproar” and “fueled accusations that top Cabinet ministers ha[d] acted more like industry lobbyists than public servants. That helped precipitate a no-confidence vote . . . that the Cabinet barely survived” (2014).

Not long after, on August 3, 2014, a hacker calling himself Phineas Fisher announced on various social media platforms that he had targeted a software firm Gamma Group and was releasing 40 gigs of data related to their most notorious piece of software FinFisher – software identified by researchers as a tool used by dictators to target journalists and political dissidents. The wide-ranging documents included

technical material (software blueprints, source code, documentation, use analysis) along with client lists, price lists, tutorials, and more. Among other revelations, the Phineas Fisher hack helped fortify the evidence that the Bahraini government had used FinFisher to target activists.

In a statement released alongside the leak, Phineas Fisher exhorted his fellow hackers to “hack back,” and gave them some pointers (2015). Although Phineas Fisher did not take on the improper name Anonymous, he pays homage to the collective and its hackers during an interview with MotherBoard: “he first got interested in hacking” wrote Lorenzo Franceschi-Bicchieri, “when he read an article on Anonymous and LulzSec hacker Jeremy Hammond in 2012” (2016a). In the context of a dramatic surge in leaking and whistleblowing activity in recent years, most notably by citizens like Chelsea Manning and Edward Snowden, this mode of leaking is distinctive for its risky direct action component; rather than leaking files entrusted to them, these hacktivists infiltrated the networks of corporations and governments in order to exfiltrate information from security and intelligence firms.

Where Phineas Fisher diverged from the likes of LulzSec and AntiSec was not in method or choice of target, but rather in demonstrating far more care, precision, and caution than Anonymous ever did (to this date he has never been apprehended). Furthermore, rather than use his time in the limelight for self-promotion, Phineas Fisher dumped the data onto Twitter and reddit, worked to draw attention to the material for 5 days, and then simply vanished.

That is, until he reemerged on July 5, 2015, to claim ownership for a similar hack – this time targeting another, even more reviled, supplier of cyber weapons called Hacking Team. The Milan-based software and security company sells what it describes as “offensive solutions” to a range of customers, from the FBI to the US Army (Currier and Marquis-Boire 2015). Like GammaGroup, Hacking Team publicly maintained its innocence, claiming it never sold goods to repressive regimes. According to the leaked data, it sold to such governments without any qualms and engaged in many other questionable practices, including stockpiling and hoarding critical software vulnerabilities – including two in the ubiquitous Adobe Flash player – that could be used against millions of Internet users. The Italian government revoked Hacking Team’s license to export spyware and lacking any strong evidence, the 2017 the Italian prosecutor assigned to the case recommended that it should be closed (see Franceschi-Bicchieri 2016b, 2017).

In spite of these consequential hacks and leaks at the hands of Lulzsec Peru and Phineas Fisher, the hacks dished out by English-speaking Anonymous, once a weekly occurrence, by 2014 started to peter out. International-based crews in Spain and Italy, however, have continued to hack at a steady pace; for example, one of the most prolific Spanish cells, LaNueve de Anonymous, carried out a hack in December 2017 in the name of #OpCatalunya, a large Anonymous operation in support of Catalonia’s bid for national sovereignty. Targeting Indra, a company responsible for tallying votes in the region, the collective explained in a rather detailed blog post how they managed to infiltrate Indra’s system (LaNueve de Anonymous 2017).

Nevertheless, even if the magnetic hacks, which had in one era led to ample coverage of them in the North American press, had dramatically waned, English-speaking Anonymous nodes still managed to land as much mainstream media coverage due to a pair of novel operations, distinct insofar as they targeted a new set of actors: sexual abusers and terrorists. In 2013, after the *New York Times* reported on a grotesque rape incident in Stubenville Ohio – multiple members of a high school football team not only raped and assaulted an inebriated female high school student, they documented the ordeal and then shared the images and videos on social media – Anonymous launched OpStubenville. By republicizing details around the case on social media and helping to coordinate local protests in Ohio, they ensured this travesty would continue to receive the attention it deserved, instead of languishing in obscurity as so often happens when coverage is limited to a single or a couple of stories. Not long after, Anonymous would lead the charge in flagging a number of other sexual assault cases in North America.

In 2015, media obsession with these masked activists only intensified, reaching a kind of frenzied apotheosis after Anonymous launched a series of actions against one of the most reviled and villainous actors today: terrorists. Following two brutal terrorist attacks in Paris, the Anonymous name was seized by a new cadre of crusaders, including many ex-members of the military, to wage a fight against global terrorism (Tynes 2017). As they reported Twitter accounts, took down recruiting websites, gathered intelligence on terrorist forums, and occasionally engaged in light hacking to overtake Twitter accounts (and post material, like gay porn, that would offend the terrorists), Anonymous would once again command the mainstream media's undivided attention for at least a few more years.

The Logics and Legacy of Anonymous

Relying on a fairly predictable script, most commentators – including journalists and academics alike – have often described Anonymous as an evasive and shadowy group of hackers with the term “amorphous” tethered to the entity more than any other, implying of course they are so inchoate as to defy comprehension, except for the fact they are hackers. These qualifiers distort sociological reality. Although many Anonymous operations have relied on hackers, a great many contributors lack the sort of skills – programing, intruding servers, and administrating communication systems – that would place them in that high-tech sociological camp. Of course, hackers have been essential to Anonymous’s networks. They erect and maintain communication infrastructure, and infiltrate servers to expose weak security or in their hunt for information to leak. Given the mass media’s feverish and fraught obsession with hackers, their actions invariably nab a majority of the headlines.

Compared to spheres of hacker activity where contributions require technical skills, Anonymous is more inclusive and participatory, which sustains its dynamism and flexibility. In order to be part of Anonymous, one need simply self-identify as Anonymous. No particular abilities are required. Individuals without technical skills can participate relying on fairly common set of organizing strategies that are not

shadowy, much less amorphous; they collectively write press communiqués, give media interviews on IRC, design propaganda posters, edit videos and mine information that is publicly available but difficult to access. To get the word out and attract new volunteers, participants even developed best practices. Back in 2010 and for much of 2011, it was common for a small dedicated team to constantly flood 4chan with propaganda material to recruit participants. Today individuals running large Anonymous Twitter accounts coordinate together to spark a “Twitter storm” with established hashtags to publicize an issue in the hopes it will trend. Organizers thus emerge to advise, inspire, corral troops, and some even broker between different groups and networks; brokering is vital for the formation of internetwork ad hoc teams.

No single group or individual can dictate the use of the name or iconography of Anonymous, much less claim legal ownership of its names, icons and actions. It has now become the quintessential anti-brand brand. Naturally, this has helped Anonymous spread across the globe. Due to this flexibility and pervasiveness, Anonymous may at times appear to be chaotic, but when taking stock of their operational oeuvre, participants rarely chose targets willy-nilly. Many operations tend to be reactive, prompted by existing events that have already gained some measure of attention with Anonymous providing a signal boost. Leaking and exposing security vulnerabilities are two proactive common interventions. Until about 2014/2015, many types of operations could be linked to a particular IRC network, such as AnonOps, but now activity has become more scattered and fragmented, with the exception of regional Anonymous nodes, such as La Nuevede Anonymous that have remained fairly active. To date, and with a few exceptions, regional operations have garnered scant academic or international media attention even when they are the most generative ones; they may prove impossible to study retrospectively.

Only a handful of actions performed under the banner of Anonymous have been atypical, such as the lone antiabortion hacker who targeted Britain’s largest abortion clinic (Quinn 2012). While predictions of chaos unleashed by evil or maladjusted hackers loom large in the state’s anxieties about Anonymous, they remain largely unrealized. To date, no Anonymous operation has been diabolical and no existing node has ever expressed the desire to do something as rash as taking down the power grid (as the NSA once predicted).

That’s not to say that all of Anonymous’s operations are laudable, or effective. Indeed, since the character and tactics of each Anonymous operation are distinct, blanket moral judgments are hard to make and tend to be overly simplistic. In some cases, targeted individuals and organizations have suffered some combination of harm to their reputation and finances. (From Anonymous’s point of view, this is the desired outcome.) Given its unpredictability, past actions are no basis for predicting the future. Still, reckless operations meant to endanger lives have, thus far, never been part of Anonymous’s moral calculus or tactical repertoire.

Anonymous participants are often pegged as renegade outlaws when the reality is far more mundane. The majority of individual Anons never break the law. Certain factions have certainly done so (and well over 100 individuals across the globe have been arrested for their alleged participation). Any vulnerability will be exploited, any

advantage generally leveraged. A handful of Anons have used tactics such as doxing, that is, leaking someone's Social Security number and home address or other personal information. This tactic was used against BART's official spokesperson and against numerous police officers who pepper-sprayed Occupy protesters.

Journalists highlight these controversial acts, which invariably amplifies Anonymous's profile and reach. Unlike criminal groups who want to remain hidden, Anonymous seeks the limelight. Partly because of its maverick image and transgressive antics, Anonymous has attracted significant attention, sometimes admiration and sometimes fear. As an entity though, Anonymous is often slippery, evasive, and invisible. Its organizing principle – anonymity (or technically pseudonymity) – makes it difficult to tell how many people are involved overall.

While certainly unique in its bombast and capriciousness, Anonymous is part of a wellspring of hackers and geeks taking political matters in their own hands to make their voices heard, orchestrate protests over a range of issues, in particular civil liberties, and transform policy and law. Anonymous signals the growing importance of what I've elsewhere called *Weapons of the Geek*, in contrast to *Weapons of the Weak* – the term anthropologist James Scott (1985) uses to capture the unique, clandestine nature of peasant politics (Coleman 2017b). While Weapons of the Weak is a modality of politics among disenfranchised, economically marginalized populations who engage in small-scale illicit acts – such as foot dragging and minor acts of sabotage – that don't appear on their surface to be political, Weapons of the Geek is a modality of politics exercised by a class of privileged and visible actors who often lie at the center of economic life. Among geeks and hackers, political activities are rooted in concrete experiences of their craft – administering a server or editing videos – skills channeled toward bolstering civil liberties, such as privacy. Unlike peasants who seek to remain inconspicuous and anonymous, geeks and hackers, even Anonymous, indisputably call attention to themselves via their volatile, usually controversial, legal and transgressive political acts. They are testing new possibilities and legal limits for digital civil disobedience.

Hackers and geeks, diverse in skills, political sensibilities, and national backgrounds, are naturally intervening in equally diverse and astonishingly large number of ways. Along with leaking and hacking, they write privacy tools (Greenberg 2013), liberate software (Kelty 2008), charter political parties (Burkhart 2014), establish semiautonomous hacker spaces (Maxigas 2012), and contribute to policy and civic hacking (Schrock 2016). While hackers and their information freedom allies are often pegged as libertarian, the reality is more complicated. "There is a wide ideological spectrum in information age ideologies," Athina Karatzogianni notes, which, ranges from "neoliberalism to cybercommunism, to libertarianism and to anarchist thought" (2015: 69).

Within this diverse and expanding ecology of hacker-based activity – one might even view it as an emerging digital environmentalism – Anonymous specializes in acts of disobedience, defiance, and protest. It is adept at magnifying issues, boosting existing (and usually oppositional) movements, and converting amorphous discontent into a tangible form. Individuals who live at great distances from each other, without hefty financial resources, band together under recognizable names and

symbols to shine attention and thus judge – often quite swiftly – the actions of individuals, corporations, and governments. To do so, they often exploit a feature of our collective digital predicament: corporations and governments have collected and stored a vast sea of digital data, often insecurely on unencrypted servers, which can be at times, legally accessed, and in others illegally procured, but once leaked, nearly impossible to contain and sequester.

Since Anonymous's forte has been publicity, it can create a PR nightmare for its targets. This reflects an important aspect of the contemporary media and information environment; the reputations of institutions or individuals are now more vulnerable to credible critiques and leaks, as well as false smear campaigns (Jacquet 2015). Even if information is not featured on the evening news, it may still spread like wildfire if enough individuals circulate it on social media.

Still, Anonymous stands apart for the unparalleled degree to which it injects suspense, drama, and intrigue into existing or self-generated events. Sometimes it merely pens a manifesto, other times it ignites a large-scale protest. Each intervention is distinct but all benefit from Anonymous's formidable PR machine. The machine churns out home-made videos, manifestos, and images via Twitter, IRC channels, or web forums, usually generating some degree of spectacle. In a more general register, their iconography – Guy Fawkes masks and headless suited people – symbolically and spectacularly asserts the idea of anonymity, which they embody in deed and words. Anonymous's particular elixir of spectacle is especially nourished by its aforementioned unpredictability and mystery: Who exactly are the actors and players behind the mask? What will they do next? How will police react to their calls for justice and their threats to release the names of alleged perpetrators? It thus works to air and dramatize a panoply of issues that might otherwise have remained hidden, elusive, or underreported.

Anonymous, already infamous, is hard to sully further, especially due to its total autonomy and relatively minimal funding requirements. Unlike Wikileaks, Anonymous has no salaries to dole out or rent to pay. Costs are largely confined to hosting IRC servers and renting botnets. As a result, Anonymous, as an entity, has little to lose and combined with no allegiance to a master plan or set of goals, it affords them tremendous experimental freedom in thought and action.

Even if shielded from shocking or degrading information about its participants or operations, charges of terrorism or overly deviant and reckless behavior have been on occasion leveled against the group by government officials and journalists. These attempts to discredit Anonymous have neither stuck as a dominant narrative, nor become prevalent, likely because they strike as hyperbolic because these activists have not engaged in violent terroristic behaviors and have even targeted those groups resorting to the most horrific acts of violence.

One might justifiably ask whether Anonymous's provocations and publicity, whether self-generated or delivered via the media, can lead to large-scale structural change or policy reform. While many of Anonymous's operations solely generate publicity, many others have focused on yielding other outcomes, although often coupled with a savvy media strategy of engagement. For example, during the Arab Spring, Anonymous provided technological assistance to activists on the ground;

many of their leaks have given a rare glimpse into the inner workings of private security companies seeking to land coveted government contracts for surveillance or propaganda – and forced one of them to shut down. Anonymous has exposed grave human rights abuses, as they did in Burma with OpRohingya, and has instigated numerous street demonstrations. However, Anonymous is ill-equipped for self-directed policy reform or targeted engagement with Internet governance. If participants were to unmask, “clean up” their act, and come out to state or national capitals to pitch their causes, they would no longer be recognizable as Anonymous.

Nevertheless, so notable was Anonymous in the anti-SOPA demonstrations, I received a call from a prominent venture capitalist involved with organizing these protests. He wanted to learn whether its participants could be harnessed a little more directly, for the purposes of rallying around Internet reform. The beauty and frustration of Anonymous lies in its unruly and unpredictable spontaneity – as they like to boast, “We are not your personal army.” This inability to harness Anonymous directly prevents their assimilation and neutralization by established institutional actors. But his intuition – that they were an important part of the mix – was correct. Some Internet advocacy employees have also told me they cannot publicly support nor work with Anonymous but are cheering them on from the sidelines (many hackers are less than enthused for seeing Anonymous as too juvenile or irrational for their taste). A number of Anons have also had numerous behind-the-scenes discussions with more traditional activists and advocates over Internet governance and other policy issues. There are nevertheless limits to Anonymous’s ability to intervene in policy reform and they are best viewed as a multifaceted protest ensemble.

Still, the broader effectiveness and success of Anonymous is contingent on the vibrancy and diversity of its wider political milieu. Anonymous is but a niche in a broader ecosystem of geek and hacker-oriented activism, which includes policy reform, participation in Internet governance, and whistleblowing. Social change requires a diverse toolkit, from fine-tuned interventions targeting policy to rowdy and subversive tactics. In the fight for digital rights and civil liberties online, Anonymous exists alongside, although not directly working with, advocacy organizations such as the Electronic Frontier Foundation (EFF). Distinct modalities need not compete or be mutually exclusive; they can and do cross-pollinate to form a broad-based, internally diverse movement. A functioning democracy requires investigative journalists who spend years piecing difficult puzzles together, advocacy groups with lawyers and policy specialists who strategize for legal reform, whistleblowers who take on individual risk, and protest movements open to the citizenry at large.

Anonymous has awoken and cultivated the political sensibilities for some citizens. Dissent of the sort Anonymous specializes in, allows citizens to exercise their rights and demonstrate on behalf of the causes they embrace. This lesson was reinforced through a conversation with one young European participant, a talented and prolific video editor. In February 2013, he revealed how fundamentally he had been transformed by Anonymous:

Well Anonymous changed a fkg lot in my life, it changed 99 [percent] of my life . . . before Anonymous, I was a regular student at school, doing stuff like playing pc games. I viewed the USA as a dream land, especially because Obama pulled back soldiers from Afghanistan. . . My dream was to become a architect or policemen, a doctor. But ever since I got involved in Anonymous, and accessed different types of information from reading twitter news, I saw how governments “saw” justice, I started to see things from an other perspective. Everyday I see the value of free speech. I work with people I didn’t even know and work with them for people who can’t always speak for themselves.

Early in May 2013, this Anon completed a video for Operation Guantanamo. Opening with a montage of news clips featuring President Obamas’ repeated promises to close down the prison on Guantanamo Bay, the video highlights the hypocrisy of a President who ran a campaign on a promise that he has thus far failed to keep. This young Anon has already made over 90 videos for Anonymous. In May 2013, he finished high school.

Conclusion

In 1996, a group of RAND researchers published a seminal book on netwar. They defined it as “an emerging mode of conflict (and crime)” in which actors rely on small teams and flexible networked organizational forms lacking a “precise central command” or a rigid hierarchy (Arquilla and Ronfeldt 1996). Although netwar is often identified with criminal activity or digital networked politics, the RAND authors emphasized its diversity. Netwar can emerge online or offline. It can be initiated for criminal, religious, ethnic, or civil society purposes. Many of the authors’ insights still ring true today. However, several examples heralded as flexible, ad hoc, peer-to-peer, and noninstitutional formations, from Moveon.org to Open Source production, are now fairly stable formations with fleshed-out strategies and doctrines; over time, they routinized and became institutions in their own right.

Anonymous, on the other hand, has steadfastly resisted routinization. With its flexibility, dynamism, and ad hoc autonomous groups, Anonymous may epitomize netwar even to the extent that protagonists celebrate and theorize its core features. Still, it is worth noting though that a few of Anonymous’s tactics, notably hacking and DDoS campaigns, rely on a logic of command-and-control. For instance, although an Anonymous DDoS attack may be widely participatory and its target may be chosen by consensus, the majority of the actual network traffic required to perform the attack is controlled by a smaller group. These elite participants must possess the technical skills to wield botnets. This reveals an element of a more traditional top-down hierarchy. In fact, a private channel on one of Anonymous’s biggest IRC networks, where targets were chosen and hacks discussed in secret, was actually called “#command.” Nevertheless, the simultaneous existence of types of operations as well as multiple backroom cabals, some at war with each other, many experiencing internal feuds, prevents a calcified and stable seat of concentrated power from forming.

Networked and flexible forms of online activism and dissent like Anonymous have arisen in lockstep with the vast collection of information and software that can algorithmically harvest data for real-time surveillance and behavior prediction. With a great degree of accuracy and sophistication, this data can forecast consumer preferences, map social relationships, predict sexual orientation based on one's friends online, and potentially even warn military or commercial institutions that a staff member is "likely" to become a whistleblower and leak sensitive information to the public (Gallagher 2013).

Anonymous is all the more interesting for its ability to escape the orbit of big data analysis, inquiry often marshaled for the purpose of anticipating behavior patterns. Even basic sociological treatment of Anonymous is difficult, although as I've emphasized here, not impossible. Nevertheless, our inability to divine its future, much less form a consistent and comprehensive account of Anonymous in the present, is most likely what is so unsettling and threatening to governments and corporations alike. Nevertheless, law enforcement has poured significant resources to find and apprehend hacker suspects. In the United States, two LulzSec hackers have been sentenced. Antisec hacker, Jeremy Hammond pleaded guilty in September 2013 to nine acts of hacking, including the Stratfor hack, and is serving out his decade-long sentence. In the UK, four individuals involved with Anonymous were sentenced in May 2013 and received punishments ranging from community service to 20 to 32 months in jail. In Ireland, two young men pleaded guilty to defacing a Fine Gael website, for which the judge noted the only harm was embarrassment. She fined them 5000 euros each and has ordered them to complete a restorative justice program.

So far judges on both sides of the Atlantic have treated their activities as purely criminal, unwilling to entertain the idea that their actions may have been principled dissent. One key difference between sentencing in Europe and USA is that in the USA, punishments are usually accompanied by astronomical fines. Both LulzSec hackers in the US were fined over \$600,000 dollars, while in the UK no one was fined and in Ireland, the largest fine has not exceeded 5000 euros.

While Anonymous has not proposed a programmatic plan to topple institutions or change unjust laws, it has made evading laws and institutions seem desirable. It has enabled action at a time when many feel that existing channels for change are either beyond their reach or too corrupt. One core organizer captured this sentiment after I asked him why he joined the more militant wing of Anonymous, Anonops: "I was sold on the raids [DDoS, black faxes, etc.] because I'd been an activist for years before I got involved in Anon, like about 4–5 years, and I'd just experienced that once vested interests have made a government decision, lobbying by ordinary people won't get it changed back without scaring them a little." By unpredictably fusing conventional activism with transgression and tricksterism, Anonymous has captured the attention of a diverse cornucopia of admirers and skeptics. Many are watching, recognizing the power of the mask as a potential force to unmask corruption, hypocrisy, and state and corporate secrecy.

Acknowledgment The Power and Politics behind the Mask was first published by the Centre for International Governance Innovation as Paper No. 3 in the Internet Governance Paper Series, copyright 2013, by the Centre for International Governance Innovation, and then in Organized Chaos: Reimagining the Internet, edited by Mark Raymond and Gordon Smith, published by the Centre for International Governance Innovation in 2014. Published with permission.

References

- Anonymous (2007) Dear Fox News. YouTube video, 29 July 2007. www.youtube.com/watch?v=RFjU8bZR19A
- Anonymous (2008) Message to Scientology. YouTube video, 21 Jan 2008. www.youtube.com/watch?v=JCbKv9yiLiQ
- Arquilla J, Ronfeldt D (1996) The advent of netwar. RAND, Santa Monica
- Bajak F (2014) Top South American hackers rattle Peru's Cabinet. DailyMail.com. <http://www.dailymail.co.uk/wires/ap/article-2740352/Top-South-America-hackers-rattle-Perus-Cabinet.html>
- Bartlulz (2011) Linton Johnson – “The face of BART.” <http://bartlulz.weebly.com/>
- Beyer JL (2014) Expect us: online communities and political mobilization. Oxford University Press, New York
- Burkart P (2014) Pirate politics: the new information policy contests. The MIT Press, Cambridge, MA
- Cheng J (2010) Anonymous targets Australian government over porn filters. Ars Technica. <http://arstechnica.com/tech-policy/2010/02/anonymous-targets-australian-government-over-porn-filters/>
- Christman T (2012) Tory Christman ex Scientologist and declared SP shares her experiences @ Dublin Offline. YouTube video, 15 Aug 2012. www.youtube.com/watch?v=SZzQUV6JUr0
- Coleman G (2017a) The public interest hack. Limn issue number eight: hacks, leaks, and breaches. <https://limn.it/the-public-interest-hack/>
- Coleman G (2017b) From internet farming to weapons of the geek. Curr Anthropol 58(S15): S91–S102
- Currier C, Marquis-Boire M (2014) Leaked files: German spy company helped Bahrain hack Arab Spring protesters. The intercept. <https://theintercept.com/2014/08/07/leaked-files-german-spy-company-helped-bahrain-track-arab-spring-protesters/>
- Currier C, Marquis-Boire M (2015) Leaked documents show FBI, DEA and US Army buying Italian spyware. The intercept. <https://theintercept.com/2015/07/06/hacking-team-spyware-fbi/>
- Deseris M (2015) Improper names: collective pseudonyms from the Luddites to Anonymous. University of Minnesota Press, Minneapolis
- Fisher P (2015) Hack back! A DIY guide for those without the patience to wait for whistleblowers. Infosecwriters.com. http://www.infosecwriters.com/Papers/PFisher_Whistleblower.pdf
- Fox News (2009) 4Chan: the rude, raunchy underbelly of the Internet. www.foxnews.com/story/0,2933,512957,00.html
- Franceschi-Bicchieri L (2016a) A notorious hacker is trying to start a “hack back” political movement. Motherboard. https://motherboard.vice.com/en_us/article/qkjnb/notorious-hacker-phineas-fishers-is-trying-to-start-a-hack-back-political-movement
- Franceschi-Bicchieri L (2016b) Hacking team has lost its license to export spyware. Motherboard. https://motherboard.vice.com/en_us/article/78k8dq/hacking-team-has-lost-its-license-to-export-spyware
- Franceschi-Bicchieri L (2017) Italian prosecutor makes request to close hacking team investigation. Motherboard. https://motherboard.vice.com/en_us/article/j5d53b/prosecutor-closes-hacking-team-investigation

- Gallagher R (2013) Software that tracks people on social media created by defense firm. The Guardian. <http://www.guardian.co.uk/world/2013/feb/10/software-tracks-social-media-defence>
- Gorman S (2012) Alert on hacker power play. The Wall Street Journal. <https://www.wsj.com/articles/SB10001424052970204059804577229390105521090>
- Greenberg A (2013) This machine kills secrets: Julian Assange, the cypherpunks, and their fight to empower whistleblowers. Plume, New York
- Jacquet J (2015) Is shame necessary?: new uses for an old tool. Vintage Books, New York
- Jordan T, Taylor PA (2004) Hacktivism and cyberwars: rebels with a cause? Routledge, London
- Karatzogianni A (2015) Firebrand waves of digital activism 1994–2014 the rise and spread of Hacktivism and Cyberconflict. Palgrave Macmillan UK, London
- Kelty C (2008) Two bits: the cultural significance of free software. Duke University Press, Durham
- Knuttila L (2011) User unknown: 4chan, anonymity and contingency. First Monday [Online] 16 (10). <http://firstmonday.org/article/view/3665/3055>
- LaNueve de Anonymous (2017) Hackeada la empresa Indra, responsable de la tecnología informática de las elecciones del 21-D. Tumblr.com. <https://la9deanon.tumblr.com/post/168758699007/hackeada-la-empresa-indra-responsable-de-la>
- LulzSec (2011) <https://twitter.com/LulzSec/status/69051330660007936>
- Maxigas (2012) Hacklabs and hackerspaces – tracing two genealogies. J Peer Prod (2). <http://peerproduction.net/issues/issue-2/peer-reviewed-papers/hacklabs-and-hackerspaces/>
- Nguyen T (2011) Anonymous hacktivists add Stuxnet code to their arsenal. Zdnet.com. <http://www.zdnet.com/article/anonymous-hacktivists-add-stuxnet-code-to-their-arsenal/>
- officialERICA GARNER @es_snipes (2018) Twitter.com. https://twitter.com/es_snipes/status/949439844140437504
- Phillips W (2015) This is why we can't have nice things: mapping the relationship between online trolling and mainstream culture. Massachusetts Institute of Technology Press, Cambridge, MA
- Quinn B (2012) Anti-abortion activism escalating, warns clinic targeted by vigil. The Guardian. www.guardian.co.uk/world/2012/mar/13/anti-abortion-activism-clinic-vigil
- Ragan S (2011) Report: HBGary used as an object lesson by Anonymous. www.thetechherald.com/articles/Report-HBGary-used-as-an-object-lesson-by-Authority/12723/
- Sauter M (2015) The coming swarm. Bloomsbury, New York
- Schrock AR (2016) Civic hacking as data activism and advocacy: a history from publicity to open government data. New Media Soc 18(4):581–599
- Scott J (1985) Weapons of the weak: everyday forms of peasant resistance. Yale University Press, New Haven
- Todd B (2008) Computers at the headquarters of the Obama and McCain campaigns were hacked CNN confirms. CNN. <http://politicalticker.blogs.cnn.com/2008/11/06/computers-of-obama-mccain-campaigns-hacked>
- Tynes R (2017) When GhostSec goes hunting. Limn issue number eight: hacks, leaks, and breaches. <https://limn.it/when-ghostsec-goes-hunting/>
- Vlavo FA (2018) Performing digital activism: new aesthetics and discourses of resistance. Routledge, New York
- Zetter K (2014) Countdown to Zero Day: Stuxnet and the launch of the World's first digital weapon. Random House Inc.



Gabriele de Seta

Contents

Introduction: The Folklore of the Digital	168
Of Jokes and Jargons: Toward Digital Folklore	169
Digital Folklore: Four Perspectives	171
On the Web: The Folklore of the Internet	172
From Below: Vernacular Creativity	174
By Users, for Users: Digital Folk Art	176
Through Contagion: Memes and Memetics	178
Conclusion: Folklore After the Digital	180
References	181

Abstract

Internet researchers recurrently encounter kinds of online content and communicational genres that appear as trivial and mundane as they are entangled with the everyday use of new media: online jargons, emoticons, copy-pasted jokes, Internet memes, and many other repertoires of digital folklore. Over the last four decades, this sort of semiotic resources and user practices have been approached from multiple angles: as forms of textual play or poaching, as examples of visual or linguistic creativity, as a material culture resulting from networked communications, as vernacular resources for identity making, and as the folk art of new media. After revisiting the convergence of folklore studies and computer-mediated communication, this chapter presents four perspectives through which various authors have approached digital folklore: Internet folkloristics, vernacular creativity, digital folk art aesthetics, and memetics.

G. de Seta (✉)

Institute of Ethnology, Academia Sinica, Taipei, Taiwan
e-mail: notsaved@live.com

Keywords

Creativity · Digital folklore · E-mail · Folk art · Folklore · GIFs · Humor · Jokes · Material culture · Memes · Memetics · Playfulness · Practices · Users · Vernacular · Web

We have these jokes and stories that will never see the printed page that exist only as glowing dots of phosphorous. It's not word-of-mouth culture but word-of-modem culture. (Prof. Robert J. Thompson, quoted in Grimes 1992, p. C14; quoted in Kirschenblatt-Gimblett 1996, p. 50; quoted in Blank 2009, p. 7)

Introduction: The Folklore of the Digital

Since the earliest scholarship on computer-mediated communication (CMC) and Internet use, researchers have grappled with certain kinds of online content, interactional scripts, and communicational genres that seemed as trivial and mundane as they were fundamental and central to the everyday use of this new medium. In the late 1980s and early 1990s, Usenet jargon, typographical emoticons, e-mail chains, ASCII compositions, IRC playfulness, mailing list flaming, copy-pasted jokes, and animated greeting cards were as omnipresent as online slang, emoji, Tumblr humor, video mash-ups, Internet memes, and animated GIFs have been throughout the 2000s and 2010s. Over the last four decades, all these semiotic resources and user practices have been approached from numerous angles: as forms of textual play or poaching, as examples of visual or linguistic creativity, as material culture resulting from networked communications, as vernacular resources for identity making, and as the folk art of new media.

Despite the varied disciplinary terminology through which different authors have described this sort of online content and the creative practices behind it, some common concerns are easily identifiable as scholars from the humanities, anthropology, sociology, cultural studies, and communication studies confronted what users were doing with the Internet once they had access to it. A first concern is related to community and space: are people interacting in online spaces really forming communities? A second concern speaks to issues of cultural traditions and time: are the instantaneous creation, dissemination, and consumption of online content conducive to cultural growth? A third concern involves the relationship between authenticity and authorship: once creative tools become popularized, what happens to cultural authority? These transdisciplinary concerns regarding the socio-cultural impact of networked sociality resonate with the same contradiction that seems to be snugly embedded in the title of this chapter – how can folklore be digital? Do digital media have their own folklore? What has innovation to do with tradition?

This chapter maps the field of Internet research dealing with “digital folklore,” which, as I argue, is the most fitting common denominator to describe the sorts of content and practices briefly introduced above. After acknowledging the earliest

attempts at understanding computational media and the Internet through the lens of folklore, I review four different approaches to digital folklore as they have been articulated by authors working across disciplinary domains. In the conclusion, taking stock of the variety of topics covered by research, I summarize the four perspectives surveyed in this chapter, argue for the usefulness of this term in the contemporary context of pervasive digital mediation, and offer some directions for future research about digital folklore after the Internet and, more speculatively, after the digital itself. Despite being a seeming contradiction in terms, digital folklore is thoroughly entangled with the uptake of new forms of mediated communication – as Daniel Miller and Don Slater note in their pioneering ethnography of Internet use in Trinidad:

This sharing of mundane life included everyday exchanges of electronic jokes, pictures, e-greetings and postcards, electronic boxes of chocolates and bouquets of flowers that people scoured the net to find for their friends. [...] These new electronic gifts are indeed new material forms that constitute relationships in new ways: that is to say, they should be treated seriously as mediations or material culture. (Miller and Slater 2000, p. 65)

By offering a review of digital folklore research, this chapter is first and foremost a call to take this domain of mediation – including jokes bouncing between screens and modems – seriously.

Of Jokes and Jargons: Toward Digital Folklore

For obvious reasons of space, this chapter has to forego a review of decades of folklore studies and begin from the pivotal moment in which the domains of folklore and of computation have started to interface in the work of several scholars. Ever since the postwar period, with their discipline increasingly subsumed in the domain of cultural or social anthropology and confronted with the rise of mass culture and popular media in industrialized societies, folklorists have struggled with maintaining stable definitions of their analytical categories, often plunging their discipline in bleak visions of its own future: “it can be assumed that folk cultures will disappear in those places where a high degree of industrialization develops” (Foster 1953, p. 171). With “culture” becoming an almost universal concept of sociological and anthropological inquiry, folklore has been demoted, as William Bascom notes, to a category including “myths, legends, tales, proverbs, riddles, the texts of ballads and other songs, and other forms of lesser importance” (Bascom 1953, p. 285).

Nevertheless, it is important to note how the movement toward digital folklore happened in a precise configuration of across several disciplines. Some folklorists, reacting to the impending sense of crisis in the discipline, sought to move beyond definitional obsessions and discover the “folk in the city” (Dorson 1970) or even “in the factory” (Nickerson 1974), paving the way for pioneering collections of office folklore (Dundes and Pagter 1975) and xeroxlore (Preston 1974). In

the human sciences, the attention to situated speech genres and emerging cultures of humor followed the rediscovery of Mikhail Bakhtin's theorizations of intertextuality and carnival humor – in particular, his study of Rabelais's oeuvre as “an encyclopedia of folk culture” (Bakhtin 1984, p. 58). Similarly, Susan Stewart's inquiry into nonsense exemplifies an attempt to translate the analytical contributions of folkloristics into other media – in her case, experimental literature and fiction – and in turn relating them to sense-making practices (1980). All these attempts at reimagining the role of folklore as both an analytical category and a concrete object of study paved the way for its interfacing with the emerging domain of the digital.

As early as 1990, John Dorst laments his dissatisfaction with the disciplinary biases of folkloristics, which make it difficult for him to confront “the emergent conditions of folklore in an advanced consumer culture” (1990, p. 180). With his discussion of the topical jokes shared on a BITNET bulletin board, Dorst prefigures the veritable explosion of vernacular content that would sweep the web a few years later. Nancy Baym is among the first scholars to recognize how computer-mediated communication supports the collaborative production of a situated culture (Baym 1994). Her ethnographic study of a Usenet newsgroup is a brilliant example of how nuanced interpretations of media practices can push back against perceptions of paucity of the digital medium commonly held at the time. Through her participatory account of the *rec.arts.tv.soaps* newsgroup, Baym demonstrates in particular how humor and its performance are “embedded in shared knowledge, shared codes and shared emotional significances which provide its meanings and determine its appropriateness” (Baym 1995). Similarly, Shelley Correll's account of interactional patterns in a lesbian BBS foregrounds typographical creativity and community-making practices (Correll 1995). Specific kinds of newsgroup humor and bulletin board vernaculars (humor dictionaries, joke collections, emoticon repertoires) might be the earliest examples of digital folklore described in its own right.

In the same years, Barbara Kirschenblatt-Gimblett provides a sharp analysis of the crisis that was troubling folklore studies in USA, combined with a pivotal call for the discipline to open up toward new domains of inquiry. In her view, the strong temporal connotations of folklore – “coded in the terminology of survival, archaism, antiquity, and tradition” (Kirschenblatt-Gimblett 1998, p. 283) – had contributed to the discipline's inability to confront contemporary worlds and new social phenomena. Folklore needed to confront new media and digital technologies, as well as their implications for traditional folkloric notions such as community, tradition, and performance. In an oft-quoted passage, Kirschenblatt-Gimblett proposes a paradigm shift: “Whereas Dorson claimed that folklore persists in the modern world in spite, not because, of technology, I would argue that folklore is a discipline made and defined by technology and especially by technologies of communication” (1998, p. 309). This critique was based on Kirschenblatt-Gimblett's own work on the “electronic vernacular,” which she defines as “electronic communication in everyday life today—that is, messages typed on a keyboard, visible on a screen, and transmitted through a global network of computers and phones” (1996, p. 21). In her

view, the electronic vernacular has to be studied ethnographically, in order to understand “what ordinary users of the medium are producing in it, socially and culturally” (p. 21).

Published at the turn of the millennium, Brenda Danet’s *Cyberpl@y: Communicating Online* is likely the first monograph centered on digital folklore. Even though Danet doesn’t use the term herself, preferring to frame her object of analysis in terms of playfulness and craft in computer-mediated communication, her analysis of expressive genres in the mid-to-late 1990s Internet is grounded on previous theories of speech play and on the ethnography of speaking (Danet 2001, p. 8). By drawing together interactivity and playfulness, Danet identifies the hacker culture roots of emerging creative practices such as ASCII compositions and personalized fonts; moving her attention to the impact of the web on user creativity (p. 209), she expands her analysis of “cyberplay” to genres of online content including animated greeting cards and emoticon collections (p. 223). While augmented by the affordances offered by computing and networked communications, these creative practices have evident similarities to traditional crafts like quilting or embroidering, leading Danet to identify them as forms of an “incipient” or “emergent” folk art (p. 274) and to inspiringly conclude that

by the end of the 20th century the computer had become a grand “grand piano,” an exciting expressive instrument that opened up many new avenues for human expression and communication, for people of all walks of life without extensive formal training in programming or hardware aspects of computing. (p. 365)

Her formulation, pulling together computing technology, expressive experimentation, amateur creativity, and vernacular crafts, sets the stage for the articulation of a wealth of theoretical perspectives on digital folklore.

Digital Folklore: Four Perspectives

This central section of the chapter presents four perspectives through which various authors have approached digital folklore. These perspectives have clear links with the pioneering approaches outlined in the previous section and develop lines of inquiry opened up by earlier scholarship. Some of these perspectives are crucial in formulating the definition of “digital folklore” itself, while others recognize different theoretical implications in similar objects of study – and yet, by reimagining disciplinary traditions through overlapping terminologies, they all contribute to shape a thriving field of research. Since a substantial part of this scholarship is largely contemporary, the following four subsections are arranged in a broad disciplinary clustering going from the development of Internet folkloristics to theorizations of vernacular creativity and from aesthetic discussions of digital folk art to the lasting influence of memetics. The distinction between these four perspectives on digital folklore is also more tenuous than a neat division in different subsections might suggest, as these scholars often quote each other across disciplines, use

parallel concepts to substantiate their own work, and redefine the same terms with slight nuances and critical edges.

On the Web: The Folklore of the Internet

The most straightforward perspective on digital folklore is the one emerging in the wake of the crisis of folklore studies (Kirschenblatt-Gimblett 1998), developed by the first folklorists moving their inquiry on the Internet. As Robert Glenn Howard notes, the discipline recognized the existence of “technologically mediated folklore” (2008a, p. 193) in jokes, urban legends, folk beliefs, and storytelling practices disseminated through the web since the early 1990s. The arrival of the web, with the resulting popularization of multimedia content, graphical interfaces, and editing software, expanded the scope of technologically mediated folklore to ASCII art, Photoshops, and personal homepages (*ibid.*). Many of these early accounts of digital folklore applied existing theories of mediated folklore to the new medium of the Internet – for example, Elliot Oring’s work on the connection between national cycles of disaster jokes and televised tragedies, in which he famously argued that “jokes may be viewed as a rebellion against a world defined by the media” (1987, p. 38), is a recurring reference in analyses of joke cycles circulating online. This subsection reviews the work being done by scholars coming from a folklore background as they approach digital media through the lens of folklore.

One of the foundational writings defining this perspective on digital folklore is Monica Foote’s essay *Userpicks: Cyber folk art in the early 21st century* (2007). Published in *Folklore Forum* 37 (most likely the first collection of academic articles grappling with the topic), this essay establishes the link between online interactions, speech communities, media practices, and creative practices:

Those who frequent chat rooms, and use instant messenger programs have developed their own folkspeech, online communities function according to their own set of customary behavior, and people represent themselves with scraps of art cobbled together into images that distinguish themselves from their fellow users. (2007, p. 27)

Foote makes a strong case for the uniqueness and relevance of this sort of “cyber folk art” and discourages folklorists from reducing it to a mere repetition of pre-existing folk genres distributed through a new medium. Through her analysis of an early LiveJournal joke format, Foote highlights how examples of cyber folk art maintain established features of folklore such as multiplicity and variation but also assume new characteristics afforded by the Internet – such as an expanded circulation and a serial cyclicity – influenced by mass media events and popular culture. Even more importantly, Foote’s essay grants a self-reflexive understanding to creators and consumers: “users recognize the seriality, variability, multiplicity and spread among the group that these cycles exhibit” (p. 30).

A similar argument animates the work of Robert Glenn Howard, which is grounded on ethnographic analyses of online religious communities and establishes

the concept of “vernacular web.” Howard’s approach to digital folklore passes through a recuperation of the term “vernacular” (a common resource for digital folklorists, as the next subsection illustrates) in light of the new affordances offered by participatory media, which contribute to the shaping of traditional forms of expression (2008a, p. 192). As he argues, “a complex and dynamic conception of the vernacular as a performed aspect of specific communication events” (2008b, p. 497) is better suited to account for the forms of literacy and ephemeral content allowed by contemporary communication technologies. Communication through digital media implies a degree of complicity between vernacular and institutional expression that folklorists should foreground in their analyses. Howard’s definition emphasizes the hybridity and dynamism of this relationship: “Taken as a whole, this technology-dependent but other-than-institutional process of dynamically interconnected discursive activity is appropriately termed ‘the vernacular web’” (2008a, p. 195). The hybridity of this vernacular web warrants a shift in methodology from a focus on media objects to an attention to the “persistent processes” of user activities on participatory media (p. 201).

The work of Foote and Howard heralds the publication of *Folklore and the Internet: Vernacular Expression in a Digital World*, a volume edited by Trevor J. Blank (2009) that showcases the state of the field of digital folkloristics at the end of the 2000s. This volume responds to a familiar deadlock – the crisis of folklore studies resulting in a narrative of disciplinary disappearance (Blank 2009, p. 1) – and offers a wealth of case studies of vernacular expression mediated by the digital. The contributions to this volume chart an inspiring variety of subjects, including the dissemination of folklore from the early days of computing to the online persistence of mass media joke cycles (Bronner 2009), the puzzling diffusion of humorous “End of the Internet” web pages that proliferate through repetition and versioning (McNeill 2009), the circulation of topical humor through forwarded e-mail messages as a form of media criticism (Frank 2009), the platform debates spurred by the userbox controversy on Wikipedia (Westerman 2009), the role of amateur web page design in the reinforcement of online communities of religious belief (Howard 2009), and the practices of mourning and memorialization developed by MySpace users confronted with the permanence of deceased people’s social media profiles (Dobler 2009).

Evidently, almost all the sources surveyed above hint at the predominance of Anglocentric, US-based folklore scholarship. Given the linguistic hegemony of English during the early years of the Web, this is not surprising – and yet, there are sparse examples of scholars directing their attention to digital folklore in other regional and national context such as China (Kozar 1995) or Russia (Gorny 2009). One of the most representative examples is the work done by Estonian folklorists, who started to archive online folklore since 1996 (Kõiva and Vesik 2009). Similarly to what happened in the USA, Estonian researchers became interested in the changes that the rapid popularization of the Internet brought to folklore in their home country and inquired about how the medium was fostering new forms of folklore such as ASCII art, e-mail chains, and emoticons (*ibid.*, p. 100). As Mare Kõiva and Liisa Vesik point out in their introduction to *Contemporary Folklore IV*, a volume entirely

dedicated to the intersection of media and folklore, “the Estonian web is in the case of many phenomena a backwater or periphery where innovations arrive with a delay” (2009, p. 109). It is precisely this partial and delayed connection to the global Internet that makes regional and national networks valuable fieldsites for the study of how digital folklore is localized through linguistic inscription (pp. 102–103) or the dissemination of translated jargon (Vesik 2009).

Responding to a widely perceived disciplinary crisis, folklorists have approached the Internet as both a technology capable of disseminating existing folklore and as a medium that undeniably encouraged the emergence of new folkloric forms. For the authors surveyed in this subsection, digital folklore can be fruitfully approached from the perspective of folklore studies, provided that this is opened up to the possibility that technological and social changes might have drastically changed what folklore is and how folklore is made.

From Below: Vernacular Creativity

The formulation of the concept of “vernacular,” which recurs throughout this chapter as a near-synonym of folklore, is credited to anthropologist Margaret Lantis, who introduced it in 1960 to characterize “vernacular culture,” the repertoire of speech acts that are “different from the literary language or from the language of straight news reporting” (Lantis 1960, pp. 202–203). Lantis’s definition frames the vernacular in the familiar opposition between official and unofficial speech or culture that is a staple in folklore theory. This opposition also animates Michel de Certeau’s discussion of “making do” (1984, p. 29), in which the subversion of laws, practices, and representations from within makes the dominant order function “in another register” (p. 32); de Certeau argues that these processes can be found “in the use made in ‘popular’ milieus of the cultures diffused by the ‘elites’ that produce language” (p. 32). Shifting the register of the official through vernacular tactics, practices of “use” separate consumers from the products they constantly assimilate and remake.

The work of Henry Jenkins translates de Certeau’s theories of consumer tactics and user practices into the domains of fandom (1992) and networked creativity (2006). In his earlier work, the idea of “textual poaching” borrowed from de Certeau is applied to the complex “participatory culture” of fandom created by television spectators (Jenkins 1992, p. 23). Jenkins’s definition of vernacular culture as “culture that is generated by amateurs, a term intended to suggest the parallels between folk culture and fan culture” (2006, p. 293) echoes Lantis’s definition of vernacular, and neatly correlates the vernacular to amateur production, and fandom to folklore. As he explains:

the current moment of media change is reaffirming the right of everyday people to actively contribute to their culture. Like the older folk culture of quilting bees and barn dances, this new vernacular culture encourages broad participation, grassroots creativity, and a bartering or gift economy. (2006, p. 132)

The crisis lamented by folklorists might be, in Jenkins's historical view, a mere interlude imposed by the emergence of mass media, after which digital media are restoring participatory affordances to spectators and consumers – what Howard calls the hybridity of the vernacular (2008a, p. 206). While Jenkins's later writings veer toward the use of terms such as “participatory culture” and “spreadable media,” craft, folklore, and the vernacular remain central to his thought: “participatory culture has much in common with these and much older forms of folk cultural production and exchange” (Jenkins et al. 2013, p. 297).

By shifting the attention from culture to creative practices, Jean Burgess's definition of “vernacular creativity” updates the concept of vernacular to the contemporary context of ubiquitous networked communications and digital media: having established that new media thrive on logics of open-endedness and emergence, “we now must understand cultural *production* to be part of everyday life in a much more literal sense” (2007, p. 203). Through her studies of photographic practices and digital storytelling, Burgess highlights the convergence between technology democratization and the neoliberal political economy that these technologies are often designed as vectors for consumers become users, their creativity is celebrated as agency, and their production of content encouraged by the platforms that profit from it (2006, p. 202). This critical take on vernacular creativity problematizes the simplistic model outlined by de Certeau: as everyday life becomes an integral domain of creative industries, and as cultural production becomes a part of everyday life, celebrating the agency of consumers as resistance from below is not enough anymore. Even if Burgess' use of the term vernacular harks back to the opposition between official and unofficial speech, her definition of vernacular creativity shirks a return to ideals of authenticity or tradition: “Vernacular creativity is a productive articulation of consumer practices and knowledges (of, say, television genre codes) with older popular traditions and communicative practices (storytelling, family photography, scrapbooking, collecting)” (Burgess 2006, pp. 206–207).

Vernacular creativity has been taken up as central concept for numerous studies focusing on user practices and genres of digital content, including the work of some contemporary folklorists (Howard 2008b). Many of such studies examine Internet memes, which Ryan M. Milner defines as “multimodal artifacts remixed by countless participants, employing popular culture for public commentary” (2013, p. 2357). In his analysis of memes emerging around the Occupy Wall Street movement, Milner identifies Internet memes as one of the kinds of digital content most prevalent in the age of participatory media (p. 2359) and connects their patterns of circulation to other examples of vernacular creativity such as YouTube videos and Twitter hashtags (p. 2360). In *The Ambivalent Internet*, co-authors Phillips and Milner similarly stress the link between vernacular creativity on digital media and older forms of folkloric expression: examining the ambivalence of this content through the familiar lenses of identity play, humor, and storytelling, Phillips and Milner tie together the contemporary and the traditional in the “weird and mean and in-between” of everyday online interactions (2017, p. 20). Moving beyond vernacular creativity and its circulation, Literat and van der Berg further shift the focus to “vernacular criticism,” a discursive practice through which Reddit users evaluate

Internet memes in financial terms to mark identity and belonging in a community of connoisseurship (Literat and van den Berg 2017, p. 13).

From the classic definition of the term “vernacular” in linguistics and anthropology to the increasingly specific articulations of vernacular culture, vernacular creativity, and vernacular criticism, researching the practices behind the production, circulation, consumption, and interpretation of amateur or unofficial content has coalesced into a coherent perspective with a solid theoretical genealogy. Approaching digital folklore from the perspective of vernacular creativity gives precedence to practices over objects, to the ambiguous position of users over the generalized identity of “the folk,” and to the social production of genres over the accretion of repertoires.

By Users, for Users: Digital Folk Art

While folklorists rediscovered traditional modes of expression through digital media and theorists of vernacular creativity focused on the practices behind these emerging repertoires, authors coming from art and design approached digital folklore from the perspective of folk art. Without delving in the thorny issue of defining folk art vis-à-vis adjacent terms such as folklore, craft, artisanship, or vernacular art, this chapter departs from Howard S. Becker’s concise definition of the term: “work done totally outside professional art worlds, work done by ordinary people in the course of their ordinary lives, work seldom thought of by those who make or use it as art at all, even though, as often happens, others from outside the community it is produced in find artistic value in it” (Becker 2008, p. 246). Becker’s definition draws on examples such as quilting, woodworking, children’s games, and ballroom dancing (p. 258), and yet folklorists of the digital recognized the relevance of folk art early on – as Brenda Danet argues, ASCII compositions are clearly a “new form of folk art,” an aesthetic practice of quilting a “pixel patchwork” (2001, p. 241) through a novel mode of communication close to the traditional understandings of folk art.

After almost a decade, Danet’s intuition is given a comprehensive vindication in *Digital Folklore*, a 2009 volume edited by Olia Lialina and Dragan Espenschied, the title of which contributes to establishing the topic of this chapter as a field of inquiry. The two editors, also practicing net artists and curators, offer the following definition of digital folklore:

If computer technology has any cultural significance, it is indeed solely owed to its users. Yet their own creative efforts, from shiny-stars live wallpapers to pictures of cute cats or rainbow gradients, are mostly derided as kitsch or general cultural waste. *Digital Folklore* argues that this apparent aesthetic clutter, created by users for users, is the most important, beautiful and widely misunderstood language of New Media. (Lialina and Espenschied 2009, fourth cover)

By emphasizing the role of Internet users in the creation of this art form, this definition assigns a precise temporality to digital folklore, which “encompasses the

customs, traditions and elements of visual, textual and audio culture that emerged from users' engagement with personal computer applications during the last decade of the 20th and the first decade of the 21st century" (Lialina and Espenschied 2009, pp. 9–10). At the same time, by noting the commonalities shared by digital folklore and net art – both aesthetics emerging from creative use of the same medium – the editors recognize how artists and users were largely doing the same "strange things" with the Internet (Arcangel 2009, p. 7).

Understanding digital folklore as the folk art of the Internet allows to pinpoint with more accuracy where this form of aesthetic production interfaces with other semiotic domains. In her rich genealogy of LOLcats (a common denomination of cat photos with humorous textual captions that were widely shared online throughout the 2000s), Helene Dams accounts for the quickening process through which an obscure digital artifact can spawn a whole Internet subculture and eventually overflow into the repertoires of popular culture (2009, p. 106). LOLcats are more than an affective currency (Berland 2008, p. 432), since their expanded circulation across networked publics establishes them as "a gigantic, global insider joke which everyone can share" (Dams 2009, p. 107). This dynamic is common to multiple genres of digital folklore, from series of captioned images to humorous video clips, and evidences how this new form of artistic production contributes to sociality: "Laughing about something together is a comparatively simple way of communicating philosophies of life, and supports the creation and preservation of social relationships" (Pettinato 2009, p. 191).

In their pamphlet *Can Jokes Bring Down Governments? Memes, Design and Politics*, design collective Metahaven offers a more activist take on digital folklore (2013). Taking their cue from Ethan Zuckerman's "cute cat theory of digital activism" (and confirming that the cat is indeed the spirit animal of digital folklore), the Dutch designers note how digital platforms designed for profiting from trivial creative practices should be a perfect medium for political activism. Given the scale, anonymity, and stickiness that humorous content can assume through online dissemination, captioned cat photos and animated GIFs can potentially play a role similar to political posters in traditional community organizing. Jokes – the broad category of digital folklore taken by Metahaven as exemplary of activist design – become a tool of political struggle. Online repositories and meme generators make creativity accessible to users with no graphic design skills, and the digital labor through which the platform economy sustains itself is also the source of endless in-jokes smuggled into the space of mainstream media (Metahaven 2013). For the Dutch collective, the emergence of joke design reflects a contemporary disaffection for traditional political institutions.

Firmly grounded in a critical arts perspective, German filmmaker Hito Steyerl's writings on digital aesthetics offer one of the most provocative takes on the materiality of digital folklore. Steyerl challenges common conceptions regarding the ephemerality of the digital image, arguing instead that its lodging into systems of circulation does render it a "poor image" – an image in motion that keeps deteriorating as it is copied and pasted, downloaded and re-uploaded, remixed, and edited, its own original quality converted into distributed accessibility (2012, p. 32). For

Steyerl, the poor image challenges attribution and copyrights while mocking the rhetorical transparency and fidelity of digital technologies; by enlisting users in its production, it gives them agency as “editors, critics, translators, and (co)authors” (p. 40) so that, eventually, digital image circulation generates a variety of folk art that challenges the very definition of the term:

Improbable objects, celebrity cat GIFs, and a jumble of unseen anonymous images proliferate and waft through human bodies via Wi-Fi. One could perhaps think of the results as a new and vital form of folk art, that is if one is prepared to completely overhaul one’s definition of folk as well as art. A new form of storytelling using emojis and tweeted rape threats is both creating and tearing apart communities loosely linked by shared attention deficit. (Steyerl 2013)

Artists and designers instinctively recognize the aesthetic responses and practices they share with amateur and nonprofessional users, leading them to appreciate and value content that would be dismissed as kitsch, poor, or just ugly (Douglas 2014). From the perspective of art and design, digital folklore represents a rich repository of aesthetic experimentation, an emerging testing ground for participatory design, and a case study in the circulation of new digital materialities, made by users for users.

Through Contagion: Memes and Memetics

Researchers working in communication and media studies have also recognized the central role that digital folklore plays in online interactions, and their approach to it has often departed from taking the concepts of folklore, vernacular, and folk art as guiding metaphors, adopting instead a perspective that narrows down the focus of inquiry on the functional role of digital objects as they circulate across media networks. The most illustrative example of this perspective is encapsulated by the term “meme” used as an analytical category. As repeated by the majority of writings on digital folklore coming from this perspective, the term “meme” was coined and defined by evolutionary biologist Richard Dawkins in 1976 to postulate a “a unit of cultural transmission or a unit of imitation” (Dawkins 2006, p. 192) imagined as the cultural equivalent of a gene. While Dawkins introduced this speculative unit as a mere explanatory metaphor (Burman 2012, p. 75), the idea caught on in disciplines outside genetics and was somewhat formalized by the pseudoscience of “memetics”; eventually, the coincidental adoption of the term by Internet users to indicate “widely propagated ideas or phenomena” (Knobel and Lankshear 2007, p. 199) granted its survival in the lexicon of media and communication studies.

The work of Limor Shifman is central to the articulation of this perspective. Inspired by the encounter with online humor – a common revelatory experience among digital folklorists – Shifman’s early writings argue that humor is a key resource to understanding social and cultural processes (2007, p. 187). Confronted with the ubiquity of Internet-based humor, Shifman decides to focus her analysis on what she terms “humor hubs,” large dynamic repositories of humorous “online

folklore,” by categorizing their content as either “globally oriented” or “locally oriented” (p. 188). Contrasting the universal or situated nature of sampled Internet-based jokes, Shifman finds that visual humor correlates to global topics, while textual jokes maintain a correlation to local topics (p. 204). In a similar vein, a 2010 article by Shifman and Menahem Blondheim analyzes a corpus of “reflexive Internet humor about networked computers” by drawing on the three major humor theories (incongruity, release, and superiority theory); according to their conclusion, the circulation of this sort of jokes “may be shaping a global community of computer users” (Shifman and Blondheim 2010, p. 1363).

With the increasing popularity of the term “meme” among Internet users, Shifman resolves to confront the legacy of Dawkins’ proposal that remains embedded in the term and to redefine memes as a viable analytical category. This move passes through the framing of memes in “genres” (Shifman 2014b, p. 340), which allows to define them as “operative signs” designed to invite other users into creative activity (*ibid.*). Through an examination of visual meme genres including reaction images and captioned stock photos, Shifman arrives at a pivotal formulation:

My definition departs from Dawkins’ conception in at least one fundamental way: instead of depicting the meme as a single cultural unit that has propagated well, I treat memes as groups of content units. The shift from a singular to a plural account of memes derives from the new ways in which they are experienced in the digital age. (2014b, p. 341)

From cultural units diffusing through mental contagion, Internet memes become collections of texts that can be easily browsed and consulted by users: freed from their unwieldy etymological heritage, memes can now be employed as an analytical category in studies of digital folklore. While Shifman’s own research focus remains oriented toward the “user-generated globalization” happening through the diffusion of humorous content (Shifman et al. 2014), the meme – as she maintains – remains “the best concept to encapsulate some of the most fundamental aspects of the Internet in general, and of the so-called participatory culture of Web 2.0 in particular” (2014a, p. 18, emphasis in original).

While Shifman was grappling with her redefinition of the term, other authors also approached digital folklore through the theoretical mediation of concepts developed in memetics. For example, Brideau and Berret’s study of the “Impact” font commonly used in meme captions proposes to identify it as “cultural replicator” that allows variation and creativity through the constraints imposed by meme generators commonly found online (2014, p. 308). In a similar vein, Sean Rintel analyzes image macros in terms of fidelity, fecundity, and longevity – three properties proposed by Dawkins himself – arguing that, despite critiques of reductionism, the memetic metaphor is still useful to understand how this sort of content diffuses through networked media (2013, p. 255). Sharbaugh and Nguyen (2014) venture beyond the predominantly Anglocentric scope of similar studies and describe the adoption of “digital techniques of remix and memetic culture” by Vietnamese Internet users and their use in support of political activism and civic engagement; while memes are described as digital artifacts that “propagate swiftly and unpredictably on social

media platforms” (p. 135), the foregrounding of the users’ agency behind their creation and dissemination counterbalances the imagery of contagion and autonomous replication that is usually associated with memetics.

The attention given by researchers in communication and media studies to the functional role of digital folklore, combined with a fortuitous career of the term “meme” among Internet users, has driven the adoption of memetics as a heuristic toolbox for the study of how jokes and humor circulate through online interactions. Approached from the perspective of memetics, digital folklore is understood as a collection of successful replicators, units of content that have spread – as if through contagion – among a local or even global population, creating community and culture in their wake.

Conclusion: Folklore After the Digital

In a chapter dedicated to the circulation of Bill Clinton humor on the Internet, folklorist Elliot Oring surveys a rich repertoire of jokes, parodies, graphic illustrations, cartoons, and photos, noting that “the immensity and anonymity of the World Wide Web lends a superorganic character to the humor that is located on it” [...] since these jokes and parodies “seem to constitute a single phenomenon to be conceptualized, analyzed, and interpreted as a whole. They appear to be the unified expression of a culture responding to the exigencies of time and circumstance” (2003, p. 129). This is an appealing interpretation, and yet the literature surveyed in the sections above proves that digital folklore is anything but singular and unified and hardly the expression of any one culture. On the one hand, digital folklore is the folklore of the digital, a continuation of long-standing practices and genres of content through relatively new media; on the other, digital folklore is a stark break with the past, a new form of vernacular creativity and a self-reflexive aesthetic of user-driven folk art. Besides, digital folklore is itself a precarious definition, the last iteration of a constellation of neologisms: xeroxlore, computerlore, screenlore, techlore, newslore, cyberfolk, online folklore, e-lore, netlore, and so on.

Digital folklore might also prove not be a lasting analytical concept, but it testifies to the widely recognized necessity for a descriptor combining the ideas of the folk, the vernacular, and the lore with the most central characteristic of contemporary media: the digital. As the four subsections above exemplify, digital folklore cuts across the field of Internet research in the broadest disciplinary terms, existing at the crossroads of anthropology and folkloristics, media and cultural studies, aesthetics and design, art history, and communication studies. If providing a comprehensive definition of digital folklore wouldn’t defeat the purpose of this chapter, I could assemble one from the titles of the subheadings: digital folklore is the folklore of the Internet, a vernacular emerging from below and a folk art created by users for users, coalescing into repertoires of jokes, memes, and other genres of digital content. While I maintain that the fourfold division into different perspectives offers a useful mapping of possible approaches to digital folklore, I want to conclude by stressing how many of the cited authors acknowledge and draw upon each other’s

perspectives: folklorists rediscover the vernacular, theorists of creativity acknowledge folk art aesthetics, designers dabble into memetics, and communication scholars hark back to traditions and folklore.

What is next? Digital folklore is a thriving field of Internet research, and the centrality of participation and creativity in the political economy of contemporary digital media will likely confirm its relevance for the near future of the Internet. While homepages and BBSs might now belong to the realm of web archaeology, the platform centric economies of the late 2010s require a new generation of digital folklorists surveying the vernaculars of social media apps and online gaming, microcelebrity, and livestreaming. And just as the shift from the web to platform apps and mobile devices resulted in new genres of digital folklore, the post-digital future will see the emergence of new forms of folkloric expression and vernacular aesthetics suited to whatever new media will come next.

The quote by Prof. Robert J. Thompson chosen as an epigraph for this chapter has become a bit of academic folklore in itself, being recursively cited across writings on digital folklore for its striking descriptive quality that still rings true in 2018 as it did in 1992: we still have jokes and stories that will never see the printed page, although they today exist as glowing liquid crystals and LED pixels rather than dots of phosphorous; but modems are still around, and digital folklore will survive them.

References

- Arcangel C (2009) Everybody else. In: Lialina O, Espenschied D (eds) *Digital folklore*. Merz & Solitude, Stuttgart, pp 7–8
- Bakhtin MM (1984) *Rabelais and his world* (trans: Iswolsky H). Indiana University Press, Bloomington
- Bascom WR (1953) Folklore and anthropology. *J Am Folk* 66(262):283–290. <https://doi.org/10.2307/536722>
- Baym NK (1994) From practice to culture on Usenet. *Sociol Rev* 42(S1):29–52
- Baym NK (1995) The performance of humor in computer-mediated communication. *J Comput-Mediat Commun* 1(2):1. <https://doi.org/10.1111/j.1083-6101.1995.tb00327.x>
- Becker HS (2008) *Art worlds*, 25th anniversary edn. University of California Press, Berkeley
- Berland J (2008) Cat and mouse: iconographics of nature and desire. *Cult Stud* 22(3–4):431–454. <https://doi.org/10.1080/09502380802012559>
- Blank TJ (2009) Toward a conceptual framework for the study of folklore and the Internet. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 1–20
- Brideau K, Berret C (2014) A brief introduction to impact: ‘The meme font’. *J Vis Cult* 13 (3):307–313
- Bronner SJ (2009) Digitizing and virtualizing folklore. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 21–66
- Burgess J (2006) Hearing ordinary voices: cultural studies, vernacular creativity and digital storytelling. *Continuum J Media Cult Stud* 20(2):201–214. <https://doi.org/10.1080/10304310600641737>
- Burgess J (2007) Vernacular creativity and new media. PhD thesis, Queensland University of Technology, Brisbane. Retrieved from https://eprints.qut.edu.au/16378/1/Jean_Burgess_The sis.pdf

- Burman JT (2012) The misunderstanding of memes: biography of an unscientific object, 1976–1999. *Perspect Sci* 20(1):75–104. https://doi.org/10.1162/POSC_a_00057
- Correll S (1995) The ethnography of an electronic bar: the Lesbian Cafe. *J Contemp Ethnogr* 24 (3):270–298. <https://doi.org/10.1177/089124195024003002>
- Dams H (2009) I think you got cats on your Internet. In: Lialina O, Espenschied D (eds) *Digital folklore*. Merz & Solitude, Stuttgart, pp 106–131
- Danet B (2001) *Cyberpl@y: communicating online*. Berg, Oxford
- Dawkins R (2006) *The selfish gene*, 30th anniversary edn. Oxford University Press, Oxford
- de Certeau M (1984) *The practice of everyday life* (trans: Rendall S). University of California Press, Berkeley
- Dobler R (2009) Ghosts in the machine: mourning the MySpace dead. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 175–193
- Dorson RM (1970) Is there a folk in the city? *J Am Folk* 83(328):185–216. <https://doi.org/10.2307/539108>
- Dorst J (1990) Tags and burners, cycles and networks: folklore in the electronic age. *J Folk Res* 27 (3):179–190
- Douglas N (2014) It's supposed to look like shit: the Internet ugly aesthetic. *J Vis Cult* 13 (3):314–339
- Dundes A, Pagter CR (1975) *Work hard and you shall be rewarded: urban folklore from the paperwork empire*. Wayne State University Press, Detroit
- Foote M (2007) Userpicks: cyber folk art in the early 21st century. *Folk Forum* 37(1):27–38
- Foster GM (1953) What is folk culture? *Am Anthropol* 55:159–173
- Frank R (2009) The forward as folklore: studying e-mailed humor. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 98–122
- Gorny E (2009) More than humor: jokes from Russia as a mirror of Russian life. In: Goggin G, McLelland M (eds) *Internationalizing Internet studies: beyond Anglophone paradigms*. Routledge, New York, pp 79–95
- Grimes W (1992) Computer as a cultural tool: chatter mounts on every topic. *The New York Times*, December 1. Retrieved from <https://www.nytimes.com/1992/12/01/arts/computer-as-a-cultural-tool-chatter-mounts-on-every-topic.html>
- Howard RG (2008a) Electronic hybridity: the persistent processes of the vernacular web. *J Am Folk* 121(480):192–218
- Howard RG (2008b) The vernacular web of participatory media. *Crit Stud Media Commun* 25 (5):490–513. <https://doi.org/10.1080/15295030802468065>
- Howard RG (2009) Crusading on the vernacular web: the folk beliefs and practices of online spiritual warfare. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 159–174
- Jenkins H (1992) *Textual poachers: television fans & participatory culture*. Routledge, New York
- Jenkins H (2006) *Convergence culture: where old and new media collide*. New York University Press, New York
- Jenkins H, Ford S, Green J (2013) *Spreadable media: creating value and meaning in a networked culture*. New York University Press, New York
- Kirschenblatt-Gimblett B (1996) The electronic vernacular. In: Marcus GE (ed) *Connected: engagements with media*. The University of Chicago Press, Chicago, pp 21–65
- Kirschenblatt-Gimblett B (1998) Folklore's crisis. *J Am Folk* 111(441):281–327
- Knobel M, Lankshear C (2007) Online memes, affinities, and cultural production. In: Knobel M, Lankshear C (eds) *A new literacies sampler*. Peter Lang, New York
- Kõiva M, Vesik L (2009) Contemporary folklore, Internet and communities at the beginning of the 21st century. In: *Media & folklore. Contemporary folklore IV*. ELM Scholarly Press, Tartu, pp 97–117

- Kozar S (1995) Enduring traditions, ethereal transmissions: recreating Chinese New Year celebrations on the Internet. *J Comput-Mediat Commun* 1(2):1. <https://doi.org/10.1111/j.1083-6101.1995.tb00329.x>
- Lantis M (1960) Vernacular culture. *Am Anthropol* 62(2):202–216
- Lialina O, Espenschied D (eds) (2009) *Digital folklore*. Merz & Solitude, Stuttgart
- Literat I, van den Berg S (2017) Buy memes low, sell memes high: vernacular criticism and collective negotiations of value on Reddit's MemeEconomy. *Inf Commun Soc*:1–18. <https://doi.org/10.1080/1369118X.2017.1366540>
- McNeill LS (2009) The end of the Internet: a folk response to the provision of infinite choice. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 80–97
- Metahaven (2013) *Can jokes bring down governments? Memes, design and politics*. Strelka Press, Moscow
- Miller D, Slater D (2000) *The Internet: an ethnographic approach*. Berg, Oxford
- Milner RM (2013) Pop polyvocality: Internet memes, public participation, and the Occupy Wall Street movement. *Int J Commun* 7:2357–2390
- Nickerson BE (1974) Is there a folk in the factory? *J Am Folk* 87(344):133–139. <https://doi.org/10.2307/539473>
- Oring E (1987) Jokes and the discourse on disaster. *J Am Folk* 100(397):276–286
- Oring E (2003) *Engaging humor*. University of Illinois Press, Urbana
- Pettinato I (2009) Viral candy. In: Lialina O, Espenschied D (eds) *Digital folklore*. Merz & Solitude, Stuttgart, pp 178–209
- Phillips W, Milner RM (2017) The ambivalent Internet: mischief, oddity, and antagonism online. Polity, Cambridge, UK
- Preston MJ (1974) Xerox-lore. *Keyst Folk* 19(1):11–26
- Rintel S (2013) Crisis memes: the importance of templatability to Internet culture and freedom of expression. *Australas J Pop Cult* 2(2):253–271. https://doi.org/10.1386/ajpc.2.2.253_1
- Sharbaugh PE, Nguyen D (2014) Make lulz, not war: how online remix and meme culture are empowering civic engagement in the Socialist Republic of Vietnam. *Asiascape: Digital Asia* 1 (3):133–168. <https://doi.org/10.1163/22142312-12340010>
- Shifman L (2007) Humor in the age of digital reproduction: continuity and change in Internet-based comic texts. *Int J Commun* 1(1):187–209
- Shifman L (2014a) *Memes in digital culture*. MIT Press, Cambridge, MA
- Shifman L (2014b) The cultural logic of photo-based meme genres. *J Vis Cult* 13(3):340–358
- Shifman L, Blondheim M (2010) The medium is the joke: online humor about and by networked computers. *New Media Soc* 12(8):1348–1367. <https://doi.org/10.1177/1461444810365311>
- Shifman L, Levy H, Thelwall M (2014) Internet jokes: the secret agents of globalization? *J Comput-Mediat Commun* 19(4):727–743. <https://doi.org/10.1111/jcc4.12082>
- Stewart S (1980) *Nonsense: aspects of intertextuality in folklore and literature*. Johns Hopkins University Press, Baltimore
- Steyerl H (2012) *The wretched of the screen*. Sternberg Press, Berlin
- Steyerl H (2013, November) Too much world: is the Internet dead? *E-Flux* J 49. Retrieved from <http://www.e-flux.com/journal/too-much-world-is-the-internet-dead/>
- Vesik S (2009) Folklore on the Internet: about the Internet (and a bit about computers). In: *Media & folklore. Contemporary folklore IV*. ELM Scholarly Press, Tartu, pp 152–161
- Westerman W (2009) Epistemology, the sociology of knowledge, and the Wikipedia userbox controversy. In: Blank TJ (ed) *Folklore and the Internet: vernacular expression in a digital world*. Utah State University Press, Logan, pp 123–158



Connecting, Bypassing, and Networking: Analyzing Idle No More's Online Activities

11

Kathy Dobson

Contents

Introduction	185
Conclusion	194
References	195

Abstract

This chapter analyzes the online presence and activities of Idle No More, the largest Indigenous protest in Canadian history, to investigate questions concerning the capacity and role of online and digital media in serving a public good, insofar as they allow activists and protestors to circumvent traditional hegemonic media control and narratives. In addition to this subversion of mainstream media power structures in terms of framing events, Idle No More also uses online tools and platforms to organize their protests and activities, demonstrating the civic role that these media platforms can fulfil and the essential public good they can provide.

Keywords

Protests · Mainstream media · Idle No More · Social media · Online and digital activism

Introduction

The Idle No More movement is a network of Indigenous communities across the country that has become one of the largest Indigenous mass protests in Canadian history since the Oka Crisis, which was a standoff between the town of Oka, Quebec,

K. Dobson (✉)

School of Journalism and Communication, Carleton University, Ottawa, ON, Canada
e-mail: dobson.kathy@gmail.com

and Mohawk protestors over a land dispute which ended up involving the provincial police and Canadian military, lasting 78 days in 1990 (Graveline 2012; Grenier 1994). A grassroots movement that emerged in late 2012 in order to speak out on Bill C-45, Idle No More presented itself as a peaceful revolution, which relies heavily on social media networks to bring attention to Bill C-45. The Bill includes changes that could potentially have an enormously negative impact on Indigenous rights in Canada as it involves changes to the Indian Act, the Waters Protection Act, the Fisheries Act, and the Environmental Assessment Act (Graveline 2012). The Bill, that became law in December 2012, includes an amendment to the Indian act that will affect leasing of reserve lands, as well as changes that will make it much easier for large-scale industrial projects to go ahead near or on reserve lands.

In this chapter, “mainstream media,” refers to mass audience, conventional media, largely based in old media forms of radio, television, and print, but extending into digital forms; this means that “mainstream media” is not just defined by platforms and history but its “conventional” position as a supporter of the status quo in social and political order. The mainstream media play a major role in forming collective public opinion, and thus, how the media frames and shapes Canada’s aboriginal population can have a significant impact on how negative stereotypes are circulated and reinforced about aborigines (Clark 2014; Anderson and Robertson 2011; Fleras 2011; Herman and Chomsky 2002; Hackett et al. 1999, 2000). For example, numerous studies have demonstrated that “mainstream” media repeat “longstanding colonial stereotypes of Indigenous people” (Clark 2014, p. 43; Chow-White and McMahon 2011) that often frame them as dependent on social assistance, alcoholic, and lazy, lacking any ambition for success or financial independence “problem people” (Gist 1990; van Dijk 1991; Karim 1997; Henry and Tator 2002; Miller 2005; Fleras 2011; Fleras and Kunz 2001; Clark 2014).

“Mainstream media” may be contrasted with “alternative media,” which often subvert social conventions and the “status quo,” enabling unpopular or marginalized causes to receive coverage that does not conform to the logic of the mainstream. Others have defined “alternative media” in a way that highlights the small-scale and participatory nature of its production (Fenton and Barassi 2011). This chapter draws on the definition put forward by Sandoval and Fuchs (2010), which contends that “alternative media” provide “visions of an alternative society” (p. 141).

The Idle No More movement has used digital technologies, such as social media platforms including Facebook, YouTube, and Twitter, to garner national and international attention and organize public rallies, marches, sit-ins, and flash mobs across the country and around the world (Bathory 2014; Morris 2014; Barker 2015; Idle No More website; Shingler 2012; Woroniak and Camfield 2013; Wotherspoon and Hansen 2013). Idle No More is “seeking a reconciliation of our relationship with the environment,” and states on its official website that “Idle No More will continue to pressure government and industry to protect the environment” (Idle No More 2013b).

This chapter will examine the contrast between “mainstream” and Aboriginal media’s framing and reporting of this movement, which the Canadian Broadcasting Corporation (CBC) has described as “the largest collective movement ever to sweep Canada” (CBC 2015). Organizers with Idle No More posit that the concerns of the

movement about the potential negative environmental impact of Bill C-45 is one all Canadians should share (Idle No More website) as the repercussions from the Bill could eventually affect everyone in the country. However, as Aboriginal media contends, there remains a common misconception that (the movement) deals exclusively with “Native issues” and “has little relevance beyond Aboriginal communities” to the rest of Canada (Our Times 2013; Idle No More website).

Using a comparative analysis, it was revealed that national and mainstream newspapers across the country featured headlines (in many cases, front page headlines) which suggested the Idle No More movement created major traffic holdups, tried to paralyze Canada’s economy, and were a financial burden on the country due to extra policing and surveillance costs; some headlines even suggested possible links to acts of terrorism (Boesveld 2013; Galloway and Moore 2013; Lewis 2013; Ling 2014a, b). An examination and comparison of those mainstream headlines with the Aboriginal digital media headlines about the same events and period of time revealed a critical discrepancy on how these events were reported on (see Tables 1 and 2). Some Aboriginal news sources suggested it might not have been Idle No

Table 1 Aboriginal media news headlines, editorials, and commentaries

<i>Idle No More Sees Bigger Issues Than C-45</i> (Horton 2013)
<i>Idle No More border blockages don't have support from founder: Blocking traffic sends wrong message</i> (Yeske 2013)
<i>Revolutionary Acts of Non-Violence Disempowers Opposition</i> (Horn-Miller 2013)
<i>Uniting in Common Causes for Peace and Prosperity, Not for War and Austerity</i> (Penner et al. 2013)
<i>Idle No More protestors brave weather and police repression</i> (Staniforth 2013)
<i>Police Racism at the Oct 7th Idle No More Montreal Rally</i> (Idle No More, October 7, 2013)
<i>Bridges or roadblocks?</i> (White 2013)
<i>Calls For Change</i> (Idle No More website)
<i>Idle No More a sign of historic Indigenous ‘Comeback’</i> (Ball 2014)
<i>Idle No More border blockages don't have support from founder. Grassroots movement is about peaceful protests, says Jessica Gordon</i> (Yeske 2013)
<i>Idle No More: Personal Attacks</i> (Bruce 2013)
<i>What if Natives Stop Subsidizing Canada?</i> (Jay 2013)
<i>Serious Financial problems on Attawapiskat but improved under Chief Spence audit indicates</i> (Russell 2013)
<i>Aboriginal Affairs shared wide range of information with spy agency to bolster Idle No More surveillance: documents</i> (Barrera 2015a)
<i>“Creative Resistance” Continues Battle with “Dangerous” Policies</i> (Ball 2013)
<i>RCMP Apologizes for Idle No More ‘Bacteria’ Comparison</i> (Barrera 2015b)
<i>They Deserve To Be Celebrated... Our Youth Are On The Move: Indigenous youth on epic journey to Ottawa deserve attention and respect</i> (Atkinson 2013)
<i>Idle No More: The Most Shameful aspect of Canadian History is the systemic racism against First Nations, Metis, and Inuit people</i> (Anderson 2014)
<i>Idle No More: Where the Mainstream Media Went Wrong</i> (Simpson 2013)
<i>Fish Broth and Fasting</i> (Simpson 2013)

Table 2 Mainstream media news headlines, editorials, and commentaries

<i>Conditions present for uprising</i> (Kennedy 2014)
<i>Aboriginal Canadians plan cross-country 'shutdown'</i> (Ritchie 2015)
<i>Idle No More protests, blockades spread across country</i> (Galloway and Moore 2013)
<i>Idle No More activists block via rail tracks... over 1000... travelers stranded</i> (Slaughter and Graf 2013b)
<i>First Nations protests 'have the ability to paralyze this country': Ontario's top police officer</i> (National Post 2013b)
<i>Idle no More Protestors Make Good on threats to shut down Canada's infrastructure</i> (National Post 2013b)
<i>Occupiers, Eco-activists and Alleged Terrorists among Those Outside Canada Finding Inspiration in Idle No More</i> (Boesveld 2013)
<i>Canada's Spy agency helped prepare all-of-government approach in case Idle No More protests 'escalated'</i> (Ling 2014b)
<i>Canadian Forces spent virtually all of 2013 watching Idle No More protestors</i> (Ling 2014a)
<i>First Nations protestors block rail lines as demonstrations roll out across Canada</i> (National Post 2013)
<i>Indians/Natives want it all but corruption and laziness prevent some of them from working for it</i> (Morris Mirror 2013)
<i>Terrorism suspects claim to be 'proud' members of Algonquin First Nation, says report</i> (National Post 2015)
<i>National Energy Board hearings disrupted by protestors</i> (Beaudin 2013)
<i>Attawapiskat audit raises questions about millions in spending</i> (Galloway 2013)
<i>Audit 'severely critical' of Chief Spence</i> (MacCharles 2013)
<i>Too many first nations people live in a dream palace</i> (Simpson 2013)
<i>Inevitable puffery surrounds Theresa Spence hunger strike while real Aboriginal problems forgotten</i> (Blatchford 2012)
<i>You call that a 'hunger strike,' Theresa Spence?</i> (Kay 2013)
<i>Theresa Spence's carefully woven cause starts to unravel</i> (McParland 2013)
<i>Criminal investigation into Chief Spence needed</i> (Broderick 2013)
<i>Chief Spence meets the spin cycle</i> (Driscoll 2013)
<i>Native talks with the Crown challenge Canada's very existence</i> (Flanagan 2013)

More than organized this event which most of the mainstream media reported on so critically at the time. This perhaps demonstrated the vital role digital platforms can play in increasing public communication capacities, influencing existing structures of cultural and governmental power, and enabling collective action among Canada's aboriginal population across the country in ways previously not possible. No longer reliant on the dominant discourse and voices of the mainstream media in Canada in order to share information and details about events surrounding, for example, the Idle No More movement, digital platforms now enabled the movement organizers to not only present their unique insider perspective on the movement's activities; they could also reach their audience more directly. These online and digital platforms thus served as a public good because they provided the public with an alternative narrative that would not otherwise be possible.

This comparative analysis of the movement's ongoing coverage in mainstream and Aboriginal media focused mainly on what was referred to at the time as the "Day Of Action" (Idle No More website; Schwartz 2013) on January 16, 2013, by the Idle No More movement, and a call for a blockage of Via Rail across Canada and also the period which covered Chief Spence's Hunger Strike. On December 11, 2012, Chief Spence declared a hunger strike in support of Idle No More and to focus public attention on First Nations issues, vowing not to end her strike until Prime Minister Stephen Harper and Governor General David Johnston agreed to sit down and discuss Canada's treaty relationship with First Nations leadership (Kay 2013; McParland 2012). Spence, chief of Attawapiskat, declared a state of emergency in 2011 because of the horrendous living conditions on the reserve at that time, which included a serious housing shortage which resulted in many families living in tents or unheated sheds, and a lack of fresh water and healthy food for its residents (Hamilton and Quan 2015).

An important question is whether alternative media platforms and digital technologies can be used to subvert oppressive power structures and protect the interests of marginalized communities by altering the flow of information, redefining the relationships between the media, governments, corporations, and the public. Specifically, can alternative media, social media, and forms of digital activism serve as forms of counter-power, acting as watchdogs for democracy by promoting the unmediated flow of information? Merlyna Lim (2018) posits, "Activists can use social media to plant a seed of social movement networks," and "digital media spaces and networks can be used to propagate new narratives, new messages, new ideas to challenge authority." Drawing on Harold Innis' concept of monopolies of knowledge as a theoretical foundation, I explored how the Idle No More movement promoted the interests of Indigenous communities through alternative media channels. By characterizing how the online presence of the movement (e.g., Facebook, Twitter, and Idle No More's website dedicated to First Nations and Indigenous issues) contributed to educating the public, I examined how these digital tools were leveraged to sidestep hegemonic media control that would otherwise overlook these issues. As David Skinner suggests, typically, privileged and powerful groups increasingly control the media, resulting in oppressive control of knowledge production and the dissemination of information (Skinner et al. 2005, p. 293). By using digital and social media platforms, reaching members of the Aboriginal communities across the country in numbers never before realized; the Idle No More movement attempted to bypass those hegemonic narratives. The role of digital technology had been critical in the widespread joining of indigenous youth across Canada as they followed news and updates on Twitter and Facebook and for reaching Indigenous Peoples in some of the more remote areas of the country and disseminating information (Schwartz 2013). Instead of having to rely on mainstream media representations, or as some of the movement leaders posited, misrepresentations of the events surrounding the movement, First Nation Peoples were now able to consult with trusted online sources, including Idle No More Twitter and Facebook accounts, in addition to Canada's National Aboriginal News Sources *Windspeaker* and

Aboriginal Peoples Television Network (APTN). Social media also played a key role in spreading the word about the call for action from the movement on October 7, 2013, which led to over 60 protests carried out across Canada, and similar events to support Idle No More in over 12 additional countries (Schwartz 2013).

To explore these questions, I performed a content analysis of this event in several of Canada's largest legacy media sources – including *The Globe and Mail* and *National Post* – and then contrasted these traditional mainstream attitudes and reports with alternative media sources from the Aboriginal community. These alternative media sources included the Idle No More movement's website, which included links to its official Twitter account that features over 41,000 followers (as of March, 2019), and also its Facebook page which has over 149,000 followers (March, 2019). I also examined *Windspeaker*, “Canada’s National Aboriginal News Source” which has won an award for best investigative reporting from the Canadian Journalists Association and claims a readership in excess of 140,000 across Canada (Windspeaker 2013). In addition to the Aboriginal Peoples Television Network (APTN), a Canadian broadcast cable television network that is broadcasted from Winnipeg focuses on programs produced by and about Aboriginal Peoples and is the first and only national Aboriginal broadcast network in the world (Piapot 2013). See Table 1, which lists headlines from Aboriginal media about these events, and Table 2, with headlines about the same events from mainstream media.

My research suggests that “mainstream” news media often frame stories about the Idle No More movement in a drastically different manner, in comparison to alternative Aboriginal news media, and often in a very negative way. These alternative platforms and social media therefore allow for greater minority political representation. Specifically, my results suggest that mainstream media appeared to characterize all First Nations social actions and demonstrations around these dates in 2012 and 2013 as being under the leadership and directive of Idle No More, even though a story in the National Post actually quoted Jessica Adams, one of the founders, as saying Idle No More wasn’t behind the blockades (Yeske 2013). Additionally, the specific language used to describe the activities arguably encouraged anger and resentment toward Indigenous people and the Idle No More movement since it often framed the movement as a disruptive force (see Table 2). For example, one article (Windsor Star 2013) headline stated “Police ready for ‘peaceful’ protest” with the word ‘peaceful’ in single quotes. The body of the article highlighted that the protestors “descended” on the city and “clogged traffic, forcing the closure” of city streets, “bringing snarled traffic to a halt.” The article also said the police were “warning” the public to expect more problems and delays “when the Idle No More protest comes to town.” At the end of the article, the newspaper included a survey: “Poll Question: Do you agree with Idle No More tactics?” and then revealed the results of 1202 voters, with the majority (almost 67%) voting “No,” they don’t agree with Idle No More “Tactics.” The use of the word “tactics” in itself suggested a certain framing of the movement’s activities and encouraged a public reaction to the use of these “tactics,” instead of polling, for example, how educated or aware the public might be about the aims and goals and objectives of the movement. While the movement was actually calling for calm and a peaceful approach, trying to unite

Canadians to fight for a common cause to protect the environment (Idle No More website 2013b), the mainstream media was reporting on “Vote whether you agree with the Idle No more ‘tactics,’ with headlines that included First Nations “paralyzing the country” and “Protestors making good on threats to shut down Canada’s infrastructure,” in addition to stories about the armed forces and Canada’s spy agency keeping a close eye on Idle No More” after fears were raised in a National Post headline about a possible link with terrorism (see Table 2).

While the mainstream media framed the events as a threat to the country’s economy and the average Canadian’s well-being, a Manitoba newspaper’s editorial claimed, “Indians/Natives want it all but corruption and laziness prevent some of them from working for it,” and although the newspaper issued an apology of sorts after being criticized for its racist rant, the newspaper also stated that “we stand by the fact that the Natives must work to get out of their situation” (Russell 2013). This contrasted sharply with the narratives being constructed and shared online, by alternative aboriginal media. For example, aboriginal news sources highlighted stories such as “Racial tensions rise along edges of Idle No More rallies” (APTN 2013) after a new blockade shut down a busy traffic artery and the drivers in idling cars got angry. One driver stuck in this traffic admitted that he didn’t know why the Natives were protesting, and insisted it did not matter since, “We bear the brunt of paying tax money that is allowing them to live in this country and not work . . . we are paying taxes for these roads that they are barricading and not allowing us to use” (APTN 2013). Some Aboriginal-based news stories tried to set the record straight, confronting unfounded criticisms or inaccuracies about the blockades and other events. For example, an article published online by an Aboriginal news source featured an interview with Jessica Gordon, one of the founders, who said it was “difficult to stay caught up with all of the events being falsely attributed to the Idle No More movement, but that Idle No More wanted to ensure any events they were involved with remain peaceful” (Yeske 2013). One story reported on by Aboriginal media about the unnecessary violent reaction by police officers to a peaceful protest by some members of the movement did not even make it into the mainstream media. According to an article on The Nation, an Aboriginal owned and operated online news source, an Idle No More action in Montreal ended with police officers “attacking” them after they were ordered by police not to erect a teepee (Idle No More website 2013). According to the article, the police became aggressive, pushed the women to the side, and, after breaking the teepee poles, went off with the fabric and broken pieces. The organizer said, “We still don’t know where the teepee is. They took it.” Although this story is available online at two different sources, it was not reported on by the mainstream media. The Aboriginal media framed the movement as being united in a common cause for “Peace and Prosperity, not for War and Austerity” (Penner et al. 2013) and presented these and other protestors as brave for standing up against and facing police repression and aggression. Aboriginal and alternative media also often highlighted the common interests for both Aboriginal Peoples and non-Aboriginal Canadians being fought for by the movement (Van Gelder 2013; Lukacs 2012; Horton 2013), something mainstream media failed to do during this period.

Additionally, a comparison of the coverage by mainstream media versus the alternative Aboriginal media of Chief Spence's hunger strike further revealed and illustrated how mainstream media often framed a story in a drastically different manner in comparison to Aboriginal news sources. Media representations of issues have a clear impact on public perceptions, which means the news media is an important site of knowledge production (Skinner et al. 2005). The mainstream media news sources examined in this chapter represent important actors in the process of information dissemination in Canada and illustrate how important the role of Aboriginal news media is to allow for greater representation. As was well-documented by numerous media outlets at the time, both traditional media and Aboriginal news media sources, Chief Spence's hunger strike meant a liquid diet of lemon water, tea, and – in what would lead to all kinds of controversy and criticism of her from Canada's mainstream national media – fish broth (see Table 2). According to Anishinaabe scholar Leanne Simpson, a fish broth diet is historically part of the survival diet for Indigenous communities facing food shortages and starvation from land loss and colonial policies (Simpson 2013). Yet the continuous focus and critique of traditional media on Chief Spence's decision at that time to include the symbolic fish broth as part of her hunger strike managed to derail and refocus the public's attention from the First Nations' concerns about Bill C-45, to whether daily sips of fish broth meant Chief Spence was truly on a hunger strike (Blatchford 2012; Kay 2013; McParland 2012; Bruce 2013; Coren 2013). For example, an editorial by the National Post appeared with the headline, "You call THAT a 'hunger strike,' Theresa Spence?" with the sub-heading: "And now: something about Theresa Spence that falls into the what-everybody-is-thinking-but-won't-say-file" (Kay 2013). The editorial went on to speculate that "what Chief Spence seems to be on is more like a detox 'diet' than a fast," because of her choice to include fish broth in her fast, then concluded, "if Chief Spence actually intends to starve herself to death, she is going about it all wrong... [but] she may actually end up doing her body a favour" (Kay 2013). Numerous other editorials, commentaries, and published letters to the editor at that time also questioned whether Spence's daily calories were even really within a hunger strike range, with many mocking her weight, calling her "fat," and speculating whether she was truly going hungry (Blatchford 2012; Kay 2013; McParland 2012; Bruce 2013; Coren 2013). On Twitter, a Sun Newspaper columnist tweeted, "Tomorrow is Day 40 in Chief Snack-a-lot's hunger strike. She still weighs a deuce, deuce and a half" (Wrightson 2013). After Sun Newspaper ran a contest asking its readers for descriptions or definitions of Chief Spence, some of the entries published included "fat, oink, garbage, chief two-chins, and Stop sucking Lysol" (Wrightson 2013).

In addition to mocking Spence's weight and making personal comments and attacks about her size, more articles, columns, and editorials also appeared which questioned her integrity and honesty after Chief Spence announced a state of emergency for her reserve; many included insinuations and outright accusations of misappropriation of reserve funds (Broderick 2013; Tonda 2013; Wrightson 2013). The Toronto Star ran an article with the headline, "Federal Government audit 'severely critical' of Chief Spence" (MacCharles 2013), and the Globe and Mail's headline stated "Attawapiskat audit raises questions about millions in spending"

(Galloway 2013). However, most of the mainstream media failed to report that this audit, which covered 5 years, included 4 years which were prior to Spence becoming Chief (Russell 2013). Yet this audit was widely reported on and continuously referred to during this period as evidence of mishandling federal money by Spence, enraging many members of the general public for what they believed represented a huge theft of millions of tax dollars (Galloway 2013), based on these mainstream media reports of the issue. However, the audit did not reveal “any evidence of misappropriation of funds” (Hamilton and Quan 2015), and mainstream media’s framing of the story contrasts with what an Aboriginal media’s reporter suggested the headline should have been instead, “Serious financial problems on Attawapiskat but improved under Chief Theresa Spence audit reveals” (Russell 2013). The National Post’s journalist Christie Blatchford wrote an article, which characterized Chief Spence’s actions as those of a terrorist. “It is tempting to see the action of one of intimidation, if not terrorism. She is, after all, holding the state a hostage to vaguely articulated demands” (Blatchford 2013). An editorial in the National Post also described Chief Spence’s behavior as “more foolish” than “inspirational,” while in comparison, her actions and behavior were being described and admired as “inspirational” in the Aboriginal media. While mainstream media framed the fish broth as a cheat and mocked Chief Spence’s hunger strike as a “cleansing diet,” Aboriginal media portrayed her as a hero, describing her as a “holy woman... a warrior, a leader because she isn’t just on a hunger strike, we know that through her physical sacrifice she is closer to the Spiritual world than we are” (Blatchford 2013). The mainstream media coverage of Chief Spence was described by Aboriginal news media as disturbing and promoting a personal assault, rather than a genuine engagement or investigation of the “specifics of Chief Spence’s political messages or examining the structures that led to the conflicts within Canada’s Indigenous communities and between them and the federal government” (Wrightson 2013). Mainstream national media’s representation of the Idle No More movement, and Chief Spence’s actions in support of the movement, lacked both breadth and depth, missing many of the nuances associated with the hunger strike and included shaming and blaming discourses which criminalized the movement and subjected Chief Spence to public ridicule and accusations that suggested she was a dishonest cheat.

I argue that, from a framework which incorporates Innis’ concept of monopolies of knowledge, and in line with a critical political economy analysis of the production of news, the narratives constructed in these mainstream media sources are the product of capitalist and neoliberal values that often distort the coverage “news.” By drawing on Innis’ concept of monopolies of knowledge, one can connect this case study to a broader discourse surrounding the monopolies that control mainstream news media coverage and how digital and social media offer an alternative platform that can circumvent these knowledge monopolies. *The Globe and Mail* is one of Canada’s largest circulation national newspapers in the country and is considered to be the “newspaper of record” by many. This suggests that when *The Globe and Mail* publishes an article on the Idle No More movement, many Canadians will read it and, arguably, form opinions around the issue based on the newspaper’s narrative. However, when an article appears on a website created and

written by Indigenous peoples, the circulation of an alternative narrative becomes possible. According to Lim (2015), “In societies where people are oppressed and repressed, power is exercised through the propagation of dominant socio-political imaginaries leaving no space for different, alternative, radical imaginaries to develop. To radically depart from dominant imaginaries mean to have sites for alternative and radical imaginations to emerge, grow, and spread.” I posit that alternative Aboriginal media sources do exactly that they offer “sites for narratives of resistance to be created, communicated and practiced” (Lim 2015).

Thanks to the use of social media, including Twitter, Facebook, and Aboriginal owned and operated media sources, First Nations people in Canada were connecting and organizing with each other in numbers never seen before, and significantly, now had access to alternative narratives about their communities and their community concerns. Their voices are now being added in large scale to the conversation about what is going on in the First Nations, Metis, and Inuit people. Although it would be overly deterministic to claim that any technology inevitably creates any kind of significant social impact, there are certain characteristics of the Internet and digital communication technologies that do enable certain configurations and patterns of communication that were not possible previously. There are specific affordances and advantages provided by these media, such as allowing for a large, widely dispersed group to communicate in particular ways, including organizing one another, but also creating alternative media platforms that can be used to present counter-narratives to those constructed and circulated by mainstream news media. For example, although mainstream media reported extensively on how disruptive road blocks and traffic interruptions by the movement were, highlighting the anger many felt toward the movement for slowing traffic and delaying their arrival to their destinations as a result, only the Aboriginal media published a story, with the headline, “Idle No More border blockages don’t have support from founder: Blocking traffic sends wrong message” (Yeske 2013). In that same article, Jessica Adams, one of the four founders, said “A lot of our children and elders are involved in the Idle No More activities, so their safety is our priority.” She went on to explain that the purpose of the Idle No More movement is not to irritate the public but, rather, “to educate Canadians about indigenous sovereignty and treaty rights” (Yeske 2013). Although she was not disputing the blockages had happened, she wanted to inform the public that these were not events that had been organized or sanctioned by the Idle No More movement. As Dahlberg-Grundberg and Lindgren posit, “online social media connections have enabled the formation of international networks among social movements” (2016, p. 51).

Conclusion

When not being misrepresented or cast in a negative light, Aboriginals are simply often not represented in mainstream media at all and rendered practically invisible (Fleras and Kunz 2001). This misrepresentation, reinforcing of negative stereotypes and shaping public opinion of Idle No More by presenting the movement as violent,

was evident in the constant stream of articles and news stories which “focus primarily on negative stories about Indigenous communities, thereby simply reinforcing dominant stereotypes” (Due and Riggs 2012; Clark 2014; Knopf 2007; Chow-White and McMahon 2011). Public perception and beliefs about Indigenous communities are mediated through these powerful discourses by mainstream media, and the disparity between this discourse and the discourse produced and circulated on Aboriginal media is enormous (Retzlaff 2006; Idle No More website; Harden 2013; The Kino-nda-niimi Collective 2014; Skinner et al. 2005; Proudfoot and Habibis 2015).

There was often a huge contrast between what mainstream media in Canada was reporting and commenting on the Idle No More movement and Indigenous media sources reporting on the same issues and stories at the same time. According to a study conducted by Journalists for Human Rights, Aboriginal issues receive only 0.46 percent of media coverage in Ontario, and almost 40 percent of those stories are negative (Baluja 2013). More than half of mainstream media stories in 2013 were about the Idle No More movement and Chief Spence’s hunger strike and “the study noted that as coverage related to the protests and talks between aboriginal people and the government became more frequent, the proportion of stories with a negative tone also increased” (Baluja 2013). One of the problems with the significant lack of coverage of aboriginal issues in mainstream media is that when a story about an important issue does appear, such as Idle No More and the surrounding concerns raised by the Aboriginal community about Bill C-45, the general public has no frame of reference and “to many, the sudden flash mob round dances and a chief hunger striking in a teepee on an island in the Ottawa River would seem to have materialized out of the blue... the emergence of the Idle No More movement and protests led to predictable public reactions, which were highlighted in the tone of the media coverage, with most of it tilting to negative tones as the protest and hunger strikes continued” (Baluja 2013). Digital and social media platforms, such Twitter, Facebook, or the alternative Aboriginal news sources discussed here, serve a public good by providing a space for the creation and circulation of alternative narratives that may run counter to the mainstream news discourses surrounding a particular issue.

Acknowledgments Kathy Dobson gratefully acknowledges the generous financial support of ALiGN (Alternative Global Network) Media Lab, under the leadership of Dr. Merlyna Lim, in the Communication Department at Carleton University, for conducting the research for this chapter.

References

- Anderson MC (2014) The suckling and the rebel: growing up imperial in Anglo North America. *J Psychohist* 42(1):28
- Anderson MC, Robertson CL (2011) Seeing Red: a history of natives in Canadian newspapers. University of Manitoba Press, Winnipeg
- Atkinson C (2013) Indigenous youth on epic journey to Ottawa deserve attention and respect. Rabble.ca. Retrieved from <http://rabble.ca/news/2013/03/indigenous-youth-epic-journey-ottawa-deserve-attention-and-respect>

- Ball D (2013) "Creative resistance" continues battle with "dangerous" policies. Windspeaker. Retrieved from <https://windspeaker.com/in-depth/idle-no-more1/creative-resistance-continues-battle-with-dangerous-policies>
- Ball D (2014) Idle No More a sign of historic indigenous 'Comeback.' Windspeaker. Retrieved from <https://ammsa.com/publications/windspeaker/idle-no-more-sign-historic-indigenous>
- Baluja T (2013) JHR Study Shows Aboriginal Issues Get Less Than 1 Per Cent of Ontario Media Coverage. J Source Can J Proj. Retrieved from <https://j-source.ca/article/jhr-study-shows-aboriginal-issues-get-less-than-1-per-cent-of-ontario-media-coverage/>
- Barker A (2015) 'A direct act of resurgence, a direct act of sovereignty': reflections on idle no more, indigenous activism, and Canadian settler colonialism. Globalizations 12(1):43–65
- Barrera J (2015a) Aboriginal Affairs shared wide range of information with spy agency to bolster Idle No More surveillance: documents. APTN. Retrieved from <http://aptn.ca/news/2015/03/18/aboriginal-affairs-shared-wide-range-information-spy-agency-bolster-idle-surveillance-documents/>
- Barrera J (2015b) RCMP apologizes for Idle No More 'bacteria' comparison. APTN Retrieved from <http://aptn.ca/news/2015/05/11/rmp-apologizes-idle-bacteria-comparison/>
- Bathory LW (2014) Society: NAAMALEQAAQ! Idle No More in the Arctic. North Public Aff. Retrieved from <http://www.northernpublicaffairs.ca/index/volume-1-issue-3-fall-2012/society-naamaleqaaq-idle-no-more-in-the-arctic/>
- Beaudin M (2013) National Energy Board hearings disrupted by protestors. National News Watch. Retrieved from <https://www.nationalnewswatch.com/?s=National+Energy+Board+hearings+disrupted+by+protestors%28Beaudin%2C+2013%29>
- Blatchford C (2012) Inevitable puffery and horse manure surrounds hunger strike while real Aboriginal problems forgotten. National Post. Retrieved from <https://nationalpost.com/opinion/christie-blatchford-inevitable-puffery-and-horse-manure-surrounds-hunger-strike-while-real-aboriginal-problems-forgotten>
- Blatchford C (2013) Don't call Spence a hero. National Post. Retrieved from <https://nationalpost.com/category/opinion/2012/12/27/christie-blatchford-inevitable-puffery-and-horse-manure-surrounds-hunger-strike-while-real-aboriginal-problems-forgotten/>
- Boesveld S (2013) Occupiers, eco-activists and alleged terrorist among those outside Canada finding inspiration in idle no More. National Post. Retrieved from <http://news.nationalpost.com/news/canada/occupiers-eco-activists-and-alleged-terrorist-among-those-outside-canada-finding-inspiration-in-idle-no-more>
- Broderick JC (2013) Criminal investigation into chief Spence needed. Nanaimo Daily News. Retrieved from <http://proxy.library.carleton.ca>
- Bruce J (2013) Idle no more: Chief Spence wouldn't be standing on 'true hunger strike,' says doc. Toronto Sun. Retrieved from <https://torontosun.com/2013/01/23/chief-spence-wouldnt-be-standing-on-true-hunger-strike-says-doc/wcm/42df9808-35a6-41ac-8468-32a61e91ca61>
- CBC (2015) Retrieved 21 May 2015, <http://www.cbc.ca/doczone/blog/idle-no-more-lighting-the-8th-fire>
- Chow-White P, McMahon R (2011) Examining the "dark past" and "hopeful future" in representations of race and Canada's truth and reconciliation commission. In: Shaw IS, Lynch J, Hackett RA (eds) Expanding peace journalism: comparative and critical approaches. Sydney University Press, Sydney, pp 345–373
- Clark B (2014) "Walking up a down-escalator": the interplay between newsroom norms and media coverage of minority groups. *Inmedia*
- Coren M (2013) Ideological narcissism: Chief's hunger strike tough to swallow. Toronto Sun. Retrieved from <https://torontosun.com/2013/01/23/chief-spence-wouldnt-be-standing-on-true-hunger-strike-says-doc/wcm/42df9808-35a6-41ac-8468-32a61e91ca61>
- Dahlberg-Grundberg M, Lindgren S, Pedagogiska institutionen, Sociologiska institutionen, Samhällsvetenskapliga fakulteten, & Umeå universitet. (2016). Social media and the trans-nationalization of mass activism: Twitter and the labour movement. First Monday 21(8) <https://doi.org/10.5210/fm.v21i8.6729>

- Denis J (2012) Why idle no More is gaining strength and why all Canadians should care. Toronto Star. Retrieved from http://www.thestar.com/opinion/editorials/2012/12/20/why_idle_no_more_is_gaining_strength_and_why_all_canadians_should_care.html
- Driscoll K (2013) Chief Spence meets the spin-cycle. APTN National News. Retrieved from <https://aptnnews.ca/2013/01/04/chief-spence-meets-the-spin-cycle/>
- Due C, Riggs DW (2012) The terms on which child abuse is made to matter: Media representations of the aurukun case. *Aust Fem Stud* 27(71): 3–18. <https://doi.org/10.1080/08164649.2012.648256>
- Fenton N, Barassi V (2011) Alternative media and social networking sites: the politics of individuation and political participation. *Commun Rev* 14(3):179–196
- Flanagan T (2013) Native Talks with the Crown challenge Canada's very existence. *Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/opinion/native-talks-with-the-crown-challenge-canadas-very-existence/article7779669/>
- Fleras A (2011) The media gaze: representations of diversities in *Canada*. UBC Press, Vancouver
- Fleras A, Kunz JL (2001) Media and minorities: representing diversity in multicultural Canada. Thompson Educational Publishing, Toronto
- Galloway G, Moore O (2013) Idle No More protests, blockades spread across country. *The Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/news/politics/idle-no-more-protests-blockades-spread-across-country/article7406990/?page=all>
- Galloway G (2013) Attawapiskat audit raises questions about millions in spending. *The Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/news/politics/attawapiskat-audit-raises-questions-about-millions-in-spending/article6995751/>
- Graveline (2012) Idle No More: Enough is Enough! *Canadian Social Work Review/Revue Canadienne De Service Social*, 29(2):293–300. Retrieved from <http://www.jstor.org/stable/43486286>
- Grenier M (1994) Native Indians in the English-Canadian press: the case of the “Oka crisis”. *Media Cult Soc* 16(2):313–336
- Gist ME (1990) Minorities in media imagery: a social cognitive perspective on journalistic bias. *Newsp Res J* 11(3):52–63. <https://doi.org/10.1177/073953299001100309>
- Hackett RA, Canadian Centre for Policy Alternatives, Gruneau RS (1999) The missing news: filters and blind spots in Canada's media. Canadian Centre for Policy Alternatives, Ottawa
- Hackett RA, Gruneau RS, Canadian Centre for Policy Alternatives (2000) The missing news: filters and blind spots in Canada's media. Canadian Centre for Policy Alternatives, Ottawa
- Harden J (2013) Quiet no more: new political activism in Canada and around the globe. James Lorimer & Company Ltd., Publishers, Toronto
- Herman ES, Chomsky N (2002) Manufacturing consent: the political economy of the mass media. Pantheon Books, New York
- Hamilton G, Quan D (2015) Controversial former Attawapiskat chief Theresa Spence fails in bid for higher office. *National Post*. Retrieved from <https://nationalpost.com/news/canada/controversial-former-attawapiskat-chief-theresa-spence-fails-in-bid-for-higher-office>
- Henry F, Tator C (2002) Discourses of domination: racial bias in the Canadian English-language press. University of Toronto Press, Toronto
- Horn-Miller W (2013) Revolutionary acts of non-violence disempowers opposition. Retrieved from <http://dividednomore.ca/2013/01/25/dismantling-the-legacy-of-trauma/>
- Horton RA (2013) Idle no More sees bigger issues than C-45
- Idle No More (2013a) Police Racism at the Oct 7th Idle No More Montreal Rally. Retrieved from http://www.idlenomore.ca/police_racism_at_the_oct_7th_idle_no_more_montreal_rally
- Idle No More (2013b) The vision. Retrieved from <http://www.idlenomore.ca/vision>
- Innis H (2008) The bias of communication (2nd ed.). University of Toronto Press, Toronto.
- Jay OD (2013) What if natives stop subsidizing Canada? The Media Co-op. Retrieved from <http://www.mediacoop.ca/blog/dru/15493>
- Karim KH (1997) The historical resilience of primary stereotypes: core images of the Muslim Other. In: Riggins SH (ed) *Communication and human values*, Vol. 24. The language and politics of exclusion: others in discourse. Sage, Thousand Oaks, pp 153–182

- Kay B (2013) You call that a ‘hunger strike’? Globe and Mail. Retrieved from <https://nationalpost.com/opinion/barbara-kay-on-theresa-spence-you-call-that-a-hunger-strike>
- Kennedy M (2014) Conditions present for uprising. Saskatoon Star Phoenix. Retrieved from <https://www.pressreader.com>
- Knopf K (2007) Terra–terror–terrorism? Land, colonization, and protest in Canadian aboriginal literature. *Canadian journal of native studies* 27(2):293. CBCA Complete
- Lewis C (2013) First Nations protests ‘have the ability to paralyze this country’: Ontario’s top police officer. National Post
- Lim M (2015) A cyber-urban space odyssey: the spatiality of contemporary social movements
- Lim M (2018) Roots, Routes, and Routers: Communications and Media of Contemporary Social Movements. *Journalism & Communication Monographs*, 20(2):92–136. <https://doi.org/10.1177/1522637918770419>
- Ling J (2014a) Canada’s spy agency helped prepare all-of-government approach in case idle no More protests ‘escalated’: secret files. National Post. Retrieved from <http://news.nationalpost.com/news/canada/canadas-spy-agency-helped-prepare-all-of-government-approach-in-case-idle-no-more-protests-escalated-secret-files>
- Ling J (2014b) Canadian forces spent virtually all of 2013 watching idle no More protesters. National Post. Retrieved from <http://news.nationalpost.com/news/canada/canadian-forces-spent-virtually-all-of-2013-watching-idle-no-more-protesters>
- Lukacs M (2012) Canada’s first nations protest heralds a new alliance. The guardian
- MacCharles T (2013) Scathing federal government audit dismissed by Attawapiskat Chief Spence as ‘distraction.’ Toronto Star. Retrieved from https://www.thestar.com/news/canada/2013/01/07/scathing_federal_government_audit_dismissed_by_attawapiskat_chief_theresa_spence_as_distraction.html
- McParland K (2012) Theresa Spence’s carefully woven cause starts to unravel. National Post. Retrieved from <https://nationalpost.com/opinion/kelly-mcparland-theresa-spences-behaviour-more-foolish-than-inspirational>
- McParland K (2013) Idle No More has been seized by occupying forces. National Post. Retrieved from <https://nationalpost.com/opinion/kelly-mcparland-idle-no-more-has-been-seized-by-occupying-forces>
- Miller J (2005) Ipperwash and the media: a critical analysis of how the story was covered. Paper Prepared for the Aboriginal Legal Foundation, Toronto
- Morris A (2014) Twenty-first-century debt collectors: Idle No More combats a five-hundred-year-old debt. *Women’s Stud Q* 42(1/2):244–260
- Nahwegahbow B (2014) Windspeaker. http://www.ammsa.com/publications/windspeaker/winter-we-danced-idle-no-more-changed-canada-15-minutes-time?utm_content=buffer7cadd&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer#sthash.w24M9NT0.dpuF. Retrieved 21 May 2015
- Narine S (2013) Political will and all of Canada needed to drive change. Windspeaker. Retrieved from <https://windspeaker.com/in-depth/idle-no-more1/political-will-and-all-of-canada-needed-to-drive-change>
- National Post (2013a) First nations protestors block rail lines as demonstrations roll out across Canada. Retrieved from <http://news.nationalpost.com/news/canada/first-nations-protests-slow-traffic-at-busiest-canada-u-s-border-crossing>
- National Post (2013b) Idle No More protestors make good on threats to shut down Canadian infrastructure. Retrieved from <http://news.nationalpost.com/news/canada/idle-no-more-protestors-make-good-on-threats-to-shut-down-canadian-infrastructure>
- National Post (2013c) First Nations protests ‘have ability to paralyze this country’: Ontario’s top police officer. Retrieved from <http://news.nationalpost.com/news/canada/canadian-politics/idle-no-more-protests-have-the-ability-to-paralyze-this-country-ontarios-top-police-officer>

- National Post (2015) Terrorism suspects claim to be 'proud' members of Algonquin first nation, says report. Retrieved from <http://news.nationalpost.com/news/canada/terrorism-suspects-claim-to-be-proud-members-of-algonquin-first-nation-says-report>
- Our Times (2013) The promise of Idle No More
- Pasternak S (2013). The economics of insurgency. Retrieved from <http://www.mediacoop.ca/story/economics-insurgency/15610>
- Penner D, O'Keefe D, Jones C (2013) Uniting in common causes for peace and prosperity, not war and austerity. Retrieved from <http://rabble.ca/news/2013/01/uniting-common-causes-peace-and-prosperity-not-war-and-austerity>
- Piapot N (2013) Racial tensions rise along edges of Idle No More rallies. APTN Retrieved from <https://aptnnews.ca/2013/01/03/racial-tensions-rise-along-edges-of-idle-no-more-rallies/>
- Proudfoot F, Habibis D (2015) Separate worlds: a discourse analysis of mainstream and aboriginal populist media accounts of the northern territory emergency response in 2007. *J Sociol* 51(2):170–188
- Retzlaff S (2006) Power over discourse: linguistic choices in aboriginal media representations. *Can J Nativ Stud* 26(1):25. CBCA complete
- Ritchie M (2015) Aboriginal Canadians plan cross-country 'shut down': 'The system has failed us miserably.' National Post. Retrieved from <https://nationalpost.com/news/canada/aboriginal-canadians-plan-cross-country-shutdown-the-system-has-failed-us-all-miserably>
- Russell R (2013) #IdleNoMore. Ryerson Rev J. Retrieved from <https://rjj.ca/idlenomore/>
- Sandoval M, Fuchs C (2010) Towards a critical theory of alternative media. *Telematics Inform* 27(2):141–150
- Schmidt D (2013) Windsor police ready for 'peaceful' protest. Windsor Star. Retrieved from <https://windsorstar.com/news/local-news/windsor-police-ready-for-peaceful-protest>
- Schwartz D (2013) Idle No More prepares for day of action. Retrieved from <http://www.cbc.ca/news/canada/idle-no-more-prepares-for-day-of-action-1.1913429>
- Shingler B (2012) Idle no more spreads beyond border as aboriginal activists ramp up pressure. The Canadian Press, Toronto
- Simpson L (2013) Fish Broth & Fasting. Divided No More website
- Skinner D, Compton JR, Gasher M (eds) (2005) *Converging media, diverging politics: a political economy of news media in the United States and Canada*. Lexington Books, Oxford
- Slaughter G, Graf C (2013a) Idle No More activists block VIA rail tracks near Kingston. Toronto Star. Retrieved from http://www.thestar.com/news/canada/2013/01/06/idle_no_more_activists_block_via_rail_tracks_near_kingston.html
- Slaughter G, Graf C (2013b) Idle no More activists block via rail tracks...over 1,000...travelers stranded. Toronto Star. Retrieved from http://www.thestar.com/news/canada/2013/01/06/idle_no_more_activists_block_via_rail_tracks_near_kingston.html
- Staniforth J (2013) Idle No More protesters brave weather and police repression. Retrieved from <http://www.nationnews.ca/idle-no-more-protesters-brave-weather-and-police-repression/>
- The Globe and Mail (2013) Ontario's top police officer defends response to Idle No More. Retrieved from <http://www.theglobeandmail.com/news/national/ontarios-top-police-officer-defends-response-to-idle-no-more/article7362888/>
- The Kino-nda-niimi Collective (ed) (2014) *The winter we danced*. ARP Books, Winnipeg
- Tully J (2014) Reconciliation here on earth. Reconciliation: responsibility for shared futures. Lecture conducted at Dalhousie University, Halifax
- van Dijk TA (1991) Racism and the press. Routledge, London
- Van Gelder S (2013) Why Canada's indigenous uprising is about all of us. Yes! Magazine
- White A (2013) Bridges or roadblocks? Retrieved from <http://dividednomore.ca/2013/01/11/bridges-or-roadblocks/>

- Wood R (2013) Controversy looms over Morris newspaper ("Indians/Natives want it all but corruption and laziness prevent some of them from working for it"). The Manitoban. Retrieved from <http://www.themanitoban.com/2013/01/controversy-looms-over-morris-newspaper/13928/>
- Woroniak M, Camfield D (2013) First nations rights: confronting colonialism in Canada. Global Research
- Wotherspoon T, Hansen J (2013) The "Idle No More" movement: paradoxes of first nations inclusion in the Canadian context. Social Incl 1(1):21–36
- Wrightson K (2013) Media Coverage of Chief Theresa Spence and Idle No More Winter 2012–13. Women Suffrage and Beyond. ISSN 2292-1060 Retrieved from <https://womensuffrage.org/?p=21051>
- Yeske K (2013) Idle No More border blockages don't have support from founder. Grassroots movement is about peaceful protests, says Jessica Gordon. Retrieved from <http://ckom.com/story/idle-no-more-border-blockades-don-t-have-support-founder/90166>



Combating the Live-Streaming of Child Sexual Abuse and Sexual Exploitation: A Need for New Legislation

12

Desara Dushi

Contents

Introduction	202
The Internet and the Sexual Abuse and Sexual Exploitation of Children	203
Live-Streaming of Child Abuse in the International Legal Instruments	204
UN Approach	204
COE Approach	206
EU Approach	208
The Treatment of Live-Streaming of Child Abuse in European and US Case Law	209
Italian Example	209
Swedish Example	210
US Example	211
The Sufficiency of Existing Instruments v. a Need for New Legislation	212
The Sufficiency of Existing Instruments	212
A Need for New Legislation	215
Conclusions	220
References	221

Abstract

Ensuring online child protection from sexual abuse and exploitation from child predators has become a major topic of concern on many societies. The global characteristics of the Internet have influenced in the globalization of potential risks of online sexual abuse and exploitation of children as well. Internet allows abusers to operate globally without regard to borders. Furthermore, online sexual abuse and exploitation of children involves a variety of crime types, ranging from child pornography, sexting and sextortion to online grooming, and live-web streaming of child abuse.

D. Dushi (✉)

CIRSFID, University of Bologna, Bologna, Italy

Faculty of Law, Economics and Finance, University of Luxembourg, Luxembourg, Luxembourg
e-mail: desara.dushi2@unibo.it

This chapter focuses on the phenomenon of online live-streaming of child sexual abuse (CSA) as the newest form of child sexual exploitation created as a result of technological developments and the least studied phenomenon created from the wide opportunities that Internet offers to malicious users. It is argued that the current existing legislation is not sufficient to tackle the phenomenon of live-streaming of child abuse. Additional legislation is required, especially in national laws, which would specifically address the offence of live-streaming of child abuse.

Keywords

Live-streaming of child abuse · ICT · Sexual abuse · Sexual exploitation of children · Crime

Introduction

In less than two decades, the Internet has become a powerful tool of informing and connecting people from all over the world turning into the primary source of information and communication by the majority of people in the world (Gottschalk 2011). This widespread of technology is obviously being used by all age groups, for various purposes, being it communication, information, and even misuse for criminal conduct. Research has shown that approximately one third of all Internet users in the world are children below the age of 18 (Livingstone et al. 2015) and that at any given moment, an estimate of 750,000 sexual predators are online (UN Special Rapporteur 2009 A/HRC/12/23). These data logically show the high risks of children being exploited online.

Technology is being used not only as a means of committing old forms of sexual abuse and exploitation but also for creating new ones. Internet ensures online anonymity of offenders, easily hiding their true identities; makes it easier for them to approach, locate, and find children for gratifying their sexual desires; and makes it more difficult for law enforcement to identify and locate them (Taylor 2011). The popularization of webcams and the rapid evolution of broadcasting that enable the streaming of live video footage have led to their exploitation by child sexual abusers. As statistics from EUROPOL's European Cybercrime Center (EC3) reveal, live-streaming of child abuse is no longer an emerging trend but an established reality (EUROPOL 2015) and is likely to further increase in the future (EUROPOL 2018).

This chapter outlines the current international and regional legal framework regarding the online sexual abuse and sexual exploitation of children analyzing whether it is sufficient to criminalize the newest phenomenon of live-streaming of child abuse and prosecute its perpetrators. It then analyzes some interesting approaches toward criminalizing the viewers of the live-streaming of child abuse in the case law of various countries showing how the lack of specific legislation can lead to quite different interpretations of the same phenomenon by different judges. Based on these controversies, the last section of this chapter argues that existing legislation is not sufficient to tackle the criminal acts of live-streaming of child

abuse; there is a new or new more specific legislation addressing this issue, allowing for the harmonization of legislation on the matter and better combating the phenomenon and keeping pace with the technological developments.

The Internet and the Sexual Abuse and Sexual Exploitation of Children

Despite the benefits to the society of the increase in Internet access, research suggests that Internet has a direct impact into the increased rates of child abuse because it increases the opportunities and options for perpetrators of child abuse (Taylor and Quayle 2003; Wolak et al. 2004; Seto et al. 2006). Same as it did with the child pornography market, turning it into a multi-billion dollar global industry (Brockman 2006), the Internet is now revolutionizing the sexual abuse of children and child prostitution, turning it into an online activity and moreover allowing it to be streamed and viewed live, in real time, and even allowing “clients” to direct the abuse through personalized requests. Live-streaming of sexual abuse of children emerged only recently as a result of the combination of the two factors: differences in child protection laws and policies among countries and the increase in Internet usage rates globally.

In the past decade, the Internet penetration rates have grown extensively, especially in developing countries. In the Philippines, where the supply for the crime of live-streaming of child abuse is more dominant (Europol 2018), in 2000 less than 2% of the population had Internet access, while as of June 2017, the amount has reached to 55.5% (UNdata; Internet World Stats). Now Internet makes it possible for criminals interested in child sexual abuse to find it and watch it from the privacy of their own homes. With various protection layers such as anonymity and encryption, criminals do not need to risk getting caught by traveling to other countries with weaker child protection legislations anymore. The increase in the Internet accessibility has led to the development and increase in volume of noncontact offenders who are dependent on technology to access child sexual abuse material (Horsman 2018). The Internet has influenced in the transformation of the offences of child sexual abuse from offences with a physical element to distant noncontact offences where the only evidence may exist in cyberspace (Meridian et al. 2013) and that evidence being very limited and difficult to find by the law enforcement.

The sense of protection and anonymity that Internet offers to the users (Horsman 2016) can lead to deviance, with individuals more likely to access material which they would not normally seek out (Horsman 2018) setting free their curiosity about child sexual abuse material (Taylor and Quayle 2003). The live-streaming of child abuse is relatively easy to access, very cheap, and not as risky as engaging in traditional child prostitution or traveling for sexually abusing children (the so-called child sex tourism). Research shows the activity of live-streaming of child abuse takes place on social media applications, video chat applications, and online chat rooms (Terre des Hommes 2018) With the increase of privacy and anonymity offered by new technologies, there is no longer the need to possess child sexual

abuse material anymore; offenders can simply view content online without leaving any traces on their devices. And with the increased number of live-streaming applications, offenders do not have to view already existing content which they might have already seen before; they can view new content on real time and even take an active part in the shaping of the content, giving the sensation of being present in the place where the child sexual abuse takes place. Perpetrators can watch the live-streaming of child abuse without the need of downloading it; thus the stream does not get locally stored and leaves limited forensic traces (Europol 2018). This situation causes many difficulties for the law enforcement in the detection and investigation of such criminal activity and in the prosecution of its offenders. All these opportunities have led to the rapid increase of live-streaming of child abuse in the last years, and it can easily be predicted that it will continue raising if rapid action is not taken to prevent it. An implemented offence criminalizing the live-streaming of child abuse would allow for the drafting of specific strategies to proactively tackle this phenomenon.

Live-Streaming of Child Abuse in the International Legal Instruments

UN Approach

The international community has made some efforts in incorporating into the legislation regarding sexual abuse and sexual exploitation of children and also the criminalization of viewing of child sexual abuse material without being in possession of such material, which includes the viewing of live-streaming of child abuse over the Internet. Starting from the United Nations (UN) level, the UN Child Rights Convention's Optional Protocol on the Sale of Children, Child Prostitution, and Child Pornography (OPSC) while defining "child pornography" states that it can be "any representation" and made by "whatever means" suggesting in this way that also live representations through the information and communication technology (ICT) can be considered as falling under the scope of this legal instrument. Furthermore, the guidelines for reporting on the OPSC require state parties to include into their national reports also the statistics regarding "live performances" of child pornography. However, no definition of what constitutes a live performance is provided by the guideline. It can nevertheless be safe to say that a live performance, as referred to by this guideline on OPSC reporting, certainly refers to one of the forms of live-streaming, which is the case when a child is forced to perform certain sexual acts in front of a webcam or any other live video-transmitting devices and the performance is viewed on real time by predators connected to the Internet. While this type of abuse can be said for certain to fall under the "live performance," it is not clear whether the drafters of this guideline intended to include under the same term also the cases of live-streaming of the sexual abuse of a child by an adult. Neither is it any reference to how should the state parties deal with cases when the viewer takes an active role into the live-streamed abuse by interacting on real time with the child

victim or the hands-on abuser asking for certain specific actions of abuse to be performed by the child or by the adult to the child.

Following the same line with the OPSC, the International Labour Organization (ILO) Convention on the worst forms of child labor lists in its Article 3 the use, procuring, or offering of a child for pornographic performances as one of the worst forms of child labor and calls on member states to criminalize such actions. The consideration that the ILO Convention gives to pornographic performances involving children and other forms of sexual exploitation of children as child labor was highly debated by some scholars under the argumentation that by referring to these forms of child sexual exploitation as a type of work, it may be implied that the object, the labor, is legitimate but the methods are inappropriate and that is why they are categorized as worst forms (Gillespie 2012). Moreover, when considering these forms of child sexual exploitation as labor, the drafters of the convention have given the impression that there is a kind of child consent to their commercial usage, failing in this way to recognize that children, due to their age and vulnerability, lack the legal capacity to consent for being engaged into commercial sexual activities (Bakirci 2007). Furthermore, Bakirci has raised another important argument against the ILO Convention showing that the drafters of the convention have failed to take into account the cultural differences among states. He claims that categorizing commercial sexual exploitation of children as a form of labor leads to child victims being viewed as child sex workers, which leads to many risks in different cultures (Bakirci 2007).

Nevertheless, despite the many controversies and debates, the role of ILO Convention into paving the way toward tackling the commercial sexual exploitation of children at an international level should not be undermined. Research shows that one of the main factors fostering the proliferation of live-streaming of child sexual abuse is poverty (Schermer et al. 2016). Commercial gain is the main reason behind the high level of supply of live-streaming of child sexual abuse in poor countries such as the Philippines which results as being the highest supply source of live-streamed material of child abuse. That said, by including the use, procuring, or offering of children in pornographic performances into the ILO Convention, the drafters made possible the fight against the commercial live-streaming of child sexual abuse, when the viewer has to make a kind of payment in order to be able to view a live-streaming of child sexual abuse. Again, no definition of pornographic performances is provided, leaving it to each member state to draft their own legal definition causing large differences among national legislations which hinder the fight against the live-streaming of child abuse, given the global nature of this phenomenon.

Passing to the regional legal initiatives to tackle online sexual abuse and sexual exploitation of children, the Council of Europe (CoE) and European Union (EU) have played a very important role in shaping the legal frameworks of their member states. On the CoE level, the Convention on Cybercrime was the first legal instrument regulating Internet crime. Among others, it addressed also the crime of child pornography through computer systems, limiting itself to the requirement toward state parties to criminalize the production, offering, distribution, procurement, and possession of child pornography through a computer system.

No mention was made to criminalization of any kind of viewing without possession of the child abuse material.

COE Approach

The Convention on the Protection of Children against Sexual Exploitation and Sexual Abuse, known as the Lanzarote Convention, was a major step forward in the protection of children against offences with a sexual nature. Lanzarote Convention consolidated the existing UN, CoE, and EU legal standards and extended them by filling their loopholes regarding the protection of children from sexual exploitation and sexual abuse. In its Article 20(1)(f), the Lanzarote Convention requires state parties to criminalize the knowingly obtaining access to child pornography through the ICT. As further explained in the Explanatory Report of the Convention, the scope of this paragraph was to give states the possibility to criminalize those offenders whose acts do not otherwise fall under the offence of procuring or possession of child pornography. Thus, it was made clear by the drafters of the convention that the intention of this provision was to criminalize the viewing of child abuse material when the offender did not download or save the viewed material in any way, thus lacking possession of the material. Furthermore, taking into consideration that the Lanzarote Convention was drafted more than 10 years ago, a time when online crimes were not so popular, the convention has been written for an unconnected world. That said, it was impossible for the drafters of the convention to create a broad enough legal text as to be able to incorporate also the then nonexistent crimes, by predicting what types of new crimes would be associated with the highly connected world of today. At that time, live-streaming of child abuse even if it existed was not yet known by the public, and the cases were very rare. That explains why the provisions of the Lanzarote Convention covered only the viewing without downloading of already registered child abuse material, not of live-streamed material.

Nevertheless, the convention gives state parties the right to make reservations, not to apply in whole or in part Article 20(1)(f), and many countries have chosen to apply this right. As such, Bulgaria, Hungary, Luxembourg, and Russia have reserved their right not to apply in whole the Article 20(1)(f), while Belgium, France, and Germany reserved the right not to criminalize the aiding and abetting and attempt to knowingly obtain access to child pornography through the ICT. Giving state parties the possibility to reserve the right to apply certain parts of a convention prevents the harmonization of legislations regarding the issue, thus preventing to a certain extent the scope of the convention itself, which is the creation of a harmonized legislation, in this case, to better fight the sexual exploitation and sexual abuse of children. Such reservations create many inconsistencies among legislations, preventing this way also the cooperation among countries in cases of cross-border crimes. And, when referring to the online child sexual abuse and exploitation, and especially to the viewing of child sexual abuse material (CSAM) online, and the live-streaming of child sexual abuse, this problem is even more persistent due to the highly cross-border nature of these crimes. The issue becomes even more problematic when

countries which are among the ones having the highest request rates for viewing online CSAM and live-streaming of CSA chose to opt out of criminalizing such activities.

Following the same line, Article 21 of the Lanzarote Convention calls upon states to take all necessary measures to criminalize offences concerning the participation of children in pornographic performances, including recruiting or coercing children for such purposes, profiting or exploiting children for such purposes, and knowingly attending pornographic performances which involve children. The scope of this provision is to criminalize both the supply and the demand of pornographic performances involving children, criminalizing both the organizers and recruiters of children for such purposes, as well as the consumers, the ones who attend such performances.

While the convention itself is very vague in terms of the environment that this provision was intended to cover, only offline or also cases of online pornographic performances, this question is answered in its Explanatory Report. As such, the Explanatory Report does not exclude the possibility of a broad interpretation of Article 21 of the convention as to cover situations of online pornographic performances. Nevertheless, it does not oblige states to embrace such an interpretation, leaving it to each state to determine whether they will regulate child pornographic performances on the online environment or not (Explanatory Report on the Council of Europe Convention on the Protection of Children Against Sexual Exploitation and Sexual Abuse, para. 148). While referring to online pornographic performances, the report explicitly mentions the use of webcams as a tool for the production of such performances, since this is the only tool used so far for such activities. But considering the rapid speed of development of technology, the potential that new technological tools replacing and surpassing the webcams will soon be created and start being misused by offenders for the creation of pornographic performances involving children, and other similar offences should be kept in mind while interpreting this provision in relation to online performances and while developing new national legislations in this regard.

While this provision provides the basis toward criminalizing the phenomenon of live-streaming of child sexual abuse on the Internet, the fact that the text itself does not mention the online environment, which is only mentioned in the Explanatory Report and moreover is left to the states to decide whether to embrace that broad explanation or not, does not provide any help toward the harmonization of national legislations regarding the phenomenon.

The second paragraph of Article 21 of the Lanzarote Convention gives states the right to limit the application of paragraph 1(c) of knowingly attending pornographic performances involving children, only to cases when the children have been recruited or coerced in conformity with paragraph 1(a) or (b). In other words, states may choose not to criminalize the knowingly attending of pornographic performances involving children in cases when the child involved in such performances has not been recruited, and no coercion or force has been used to make the child get involved in such performances, as well as if the organizer does not have any profit from the organization of such pornographic performances or does not in other words

exploit the child for such purposes. That said, states may choose not to criminalize the knowingly attending of pornographic performances involving children when they claim the child is willingly participating in those performances, with no use of force or coercion, and when the attendance/viewing is free of charge. The text of this paragraph includes two big issues: first, the drafters did not take into account that the children cannot, on a legal basis, give consent to participate in such pornographic performances and that even though, in a certain case, there seems to be a consent expressed from the child, it should and has to be disregarded, since children lack the legal right to give consent for participating in activities which are harmful to their physical and moral being. Thus, even though there is a lack of demonstration of clear recruitment steps or clear coercion or force, this does not mean the child should not be considered as a victim. And secondly, this reservation seems to tackle only cases of commercial pornographic performances involving children while disregarding cases when similar activities have no commercial element in them but only the sexual gratification of the organizers and the consumers.

Analogically, one could say that if a country A decides to criminalize the live-streaming of child sexual abuse online, on the basis of Article 21 of the Lanzarote Convention and by applying the reservation right provided in the second paragraph of this provision, viewing a live-streamed sexual abuse of a child in country A on a free access link, thus without paying for the viewing, and believing that the child has not been recruited by the use of force or coercion to take part in such an activity – for example, the parent has convinced the child that this is a normal activity that every child can make, so the child appears even smiling in front of the webcam – is not considered a criminal activity in country A, despite the age of the child.

EU Approach

Since 1991 also the EU gained criminal law competences. Since then it has paid large attention to the fight against online sexual abuse and sexual exploitation of children. The council decision of 2010 to combat child pornography on the Internet, which is binding to the Member States, requires Member States to be in a constant guard on technological developments and their misuse so as to continue developing new legislation and especially to make changes to their criminal laws and criminal procedural laws as necessary to keep pace with technology and be able to efficiently fight online sexual abuse and sexual exploitation of children (Council Decision of 2010 to Combat Child Pornography on the Internet, Article 4). Considering the binding nature of this decision, this provision provides a very important legal basis for EU Member States to enact new legislation when it is lacking, leaving no space for Member States to claim they were unable to tackle any case of online sexual abuse and sexual exploitation of children because of loopholes in their legislation.

The most important legal instrument on the fight of sexual abuse and sexual exploitation of children is nevertheless the Directive 2011/93/EU on combating sexual abuse, sexual exploitation, and child pornography which replaced the previously existing Framework Decision 2004/68/JHA. While this Directive is very

similar to the CoE Lanzarote Convention, it provides a more robust legal framework introducing many novelties in comparison to the Lanzarote Convention. One of the most important novelties is the exclusion of the possibility for reservations to its provisions, which leads to higher harmonization of national legislations among EU Member States, a crucial element for the fight against sexual abuse and sexual exploitation of children.

The EU Directive is the first regional instrument introducing a definition of what constitutes “pornographic performances.” As such, by “pornographic performances” the Directive refers to live exhibitions of a child engaged in real or simulated sexually explicit conduct or of the sexual organs of a child for sexual purposes, including by means of ICT, when the exhibition is aimed at an audience (Directive 2011/93/EU Article 2(e)). Besides this definition, the regulation of the offences concerning pornographic performances is very similar to the regulation provided by the Lanzarote Convention.

In a resolution on the implementation of the Directive, the European Parliament expresses its concern that Member States have only partially transposed the provision of the Directive, stressing in particular measures against the increased threat of live-streaming of child abuse (European Parliament resolution of 14 December 2017, para. 10). If the legislation in place to tackle live-streaming is nonexistent or weak, criminals will always find new ways of abusing with the technology and use it for committing this crime. There is a need for multidirectional action, including legislation, technological detection and prevention mechanisms, investigation, punishment of abusers, and protection of victims.

The Treatment of Live-Streaming of Child Abuse in European and US Case Law

Italian Example

In two judgments in 2003 and 2004, the Supreme Court gave a novel, more developed, and modern definition of “prostitution.” According to this definition, there is a shift in focus on what is considered to be the fundamental element of the offence of prostitution. The Supreme Court stated that prostitution should be qualified not anymore based on the typology of sexual activities carried out by the child but based on the commercial element of those sexual activities involving a child (Cass. Pen. Sez. III. 08.06.2004 N. 25,464). The court further clarifies that, this way, the until then characterizing element of prostitution, the physical contact between the child and the adult, is not as crucial anymore; the fact that a sexual act is committed in return for payment and the act is committed in a direct and immediate way, with the possibility of the client to ask for specific acts to be performed, are the characterizing elements of the offence of prostitution (Cass. Pen. Sez. III. 08.06.2004 N. 25,464; Cass. pen., sez. III, 12.2.2003, n. 13,039, CED, 224116). Hence, according to these rulings, it is only necessary that the client can interact on real time with the child victim, directing the acts of the child, despite not being

located at the same room with the victim. Therefore, Italy recognizes the existence of a form of virtual sex with children, which according to the courts, can be tackled based on the provisions regarding child prostitution.

By excluding the necessity of physical contact between the parties, thus the child and the “client,” the court has given a completely new dimension to the definition of the offence of prostitution, broadening the scope of the offence. Indeed, this wide definition of prostitution tends to recognize the nonmaterialization of interpersonal relations that have now started occurring in distance through the ICT in front of a webcam (Bernasconi 2017). Furthermore, the court clarifies that it can be considered as child prostitution also in cases when the client merely views the child performing sexual acts over himself/herself without directly interacting with the child, as long as the transmission happens in real time and the user is able to interact in real time with the child (Cass. Pen. Sez. III. 08.06.2004 No. 25464). This court interpretation which changes completely the traditional concept of “prostitution” makes possible for the live-streaming of child sexual abuse to be criminalized as a type of online prostitution or virtual sex.

It should be taken into consideration, however, that interpretations of the Court of Cassation are not binding (see Supreme Court of Cassation website); the other courts may refer to these sentences, as well as they may disregard them completely. Thus, unless the Constitutional Court releases an interpretation of prostitution which adopts the stand of the Court of Cassation, this interpretation remains a unique non-binding interpretation, which can be considered as a precedent for other courts to follow. Indeed, the interpretation of prostitution in such a broad, innovative way has been embraced only by a few other courts and judges in Italy, a predictable result, taking into consideration the long history of prostitution being considered as having the physical contact as a constitutive element of the crime.

Swedish Example

A recent case of live-streaming of child abuse runs the headlines in Sweden in 2017 (see The Local SE Available at: <https://www.thelocal.se/20171201/sweden-convicted-of-online-rape-of-children-from-us-canada-and-scotland>). The decision of the judge of the District Court of Uppsala to sentence the viewer of live-streaming of child abuse from the webcam of his computer for the offence of rape caused many controversies. The offender forced child victims to commit sexual acts in front of the webcam for his sexual gratification by giving instructions to the child victims on what acts to perform. Instead of sentencing him for offences such as production of child pornography and incitement to commit sexual activity, the judge in the District Court of Uppsala decided to sentence him with the most serious offence of child rape. The reasoning behind this judgment, as explained by the court, relates to the seriousness of the sexual acts the child victims were forced to commit which according to the judge are tantamount to a forced sexual intercourse (Rättelse/komplettering Dom, 2017-11-30. Uppsala Tingsrätt). The judge based his verdict on the severity of the harm caused to the child victims, reaching to the conclusion

that, even though there was no physical contact between the offender and the victims, the harm caused to the victims by the acts they were forced to perform under threats from the offender is so severe that they can be considered comparable to the pain that would have been caused had the offender physically raped the victims. This was the first case in Sweden that a judge does not consider as a constitutive element of the offence of rape the physical contact between the offender and the victim, sentencing this way, the viewer of online live-streaming of child abuse with rape. It led to huge controversies in the country as to the definition of rape (See: The Local SE, Available at: <https://www.thelocal.se/20171201/swede-convicted-of-online-rape-of-children-from-us-canada-and-scotland>; <https://www.thelocal.se/20170928/swede-accused-of-sexually-abusing-children-online-in-us-uk-and-canada>).

Notwithstanding the excellent argumentation of the court regarding to the level of harm caused to the child, an example to be followed by all the countries, the judge found himself in a situation of a legal loophole, where no offence was suitable enough to punish the offender for the level of harm caused to the child without having any physical contact with the victim. This ruling is a clear example of the need for specific legislation regarding the online live-streaming of child abuse, which would make clear the distinction of this offence from other offences such as rape, by specifying the constitutive elements of this crime and fixing a proper conviction range for these offences, so that judges do not need to go beyond the general interpretations of traditional offences in order to give the deserved level of sentence for the severity of such crimes.

The case, however, controversial, being the first one in its kind, sets a precedent for online crimes to be treated as seriously as offline crimes. It also raises the question whether a similar conviction would be possible in other jurisdictions.

US Example

In a more recent judgment in the USA, 15 individuals were prosecuted for the sexual abuse of a 6-year-old child and live-streaming it on a video-conferencing platform (US Department of Justice, available at <https://www.justice.gov/opa/pr/two-men-convicted-engaging-child-exploitation-conspiracy>). These offenders, located in different states, had worked together to create a secure space on a video-conferencing website, which would leave no evidence in their computer devices, where they would then share live-streaming of sexual abuse, including infants. The offenders not only watched the live abuse but also commented and encouraged the abuse on real time. Twelve of the offenders pleaded guilty prior to trial, two died before trial, while the remaining two were found guilty on charges of conspiracy to advertise child pornography, conspiracy to receive/distribute child pornography, and aiding and abetting the receipt/distribution of child pornography (US Department of Justice, available at <https://www.justice.gov/opa/pr/two-men-convicted-engaging-child-exploitation-conspiracy>).

Evidently, the US legislation considers cases of live-streaming of child abuse as child pornography. There is no distinction in treatment of cases of pre-recorded child pornography and the participation in real-time transmission of child sexual abuse on the Internet, despite the fact that in the latter case, the viewers were able to interact with the hands-on abuser and encourage him in continuing with the abuse.

The Sufficiency of Existing Instruments v. a Need for New Legislation

As stated in the previous sections, while it cannot be said that the crime of live-streaming of sexual abuse of children falls completely out of attention of international and national legislators, not enough action has been taken. There are still large inconsistencies both among national legislations and among jurisdictional disputes due to the global nature of the crime. Also, case law on the matter varies among different nationalities and is largely inconsistent. These inconsistencies among countries and the legal loopholes in the protection of children from the phenomenon of live-streaming of child abuse are in breach of the provisions of the UNCRC to which the majority of the states are part of. Article 19 of the CRC requires states to take all appropriate legislative, administrative, social, and educational measures to protect children from all forms of violence. Despite this obligation under the main international legal document on child protection, many states parties to the convention still have legal loopholes and lack the necessary measures to protect children from online sexual abuse and sexual exploitation, thus being in breach of the convention (Carr and Hilton 2011). An explanation for this might be the lack of an enforcing mechanism to ensure compliance with the convention and the lack of a complaints mechanism in cases of failure to comply with the UNCRC (Carr and Hilton 2011). Therefore, there is a need for more effective regulatory mechanisms and higher collaboration toward unification of legislative, procedural, technological, and other measures necessary to better and faster response toward the issue. Lastly, but not less important, there is a need of raising awareness on the matter among the public and the tech community, especially the ISPs on their role in protecting children from the live-streaming of child abuse.

The Sufficiency of Existing Instruments

The idea of new legal instruments can be opposed by claims that drafting and implementing a new legislation is a long time-consuming process while technology especially ICT is a constantly and rapidly developing environment. This way, claims could be made on the true effectiveness of such legislation if, while the legislators are drafting the law for the current situation, technology has meanwhile developed and

offenders have passed to another level of committing acts of online live-streaming of child abuse. Therefore, when the law would finally be drafted and passed, it will already be behind the technological progress, thus potentially outdated and irrelevant.

On the view of a constantly evolving cyberspace, which provides for innovative methods and tools for committing online crimes, many would claim that a better approach would be to use the legislation that already exists while interpreting it broadly enough to cover all new forms of crimes that the rapid development of the ICT generates. For instance, during interactions and interviews with lawyers and investigators of online crimes, some argued that existing legislation provides a sufficient legal basis for states to investigate and prosecute crimes, including the live-streaming of child abuse, if one is able to effectively interpret such laws based on what one needs to tackle this kind of offence (Interview with the team leader of the team working on crimes regarding sexual abuse and sexual exploitation of children at Europol EC3; private conversation with an attorney from Switzerland, conversations with representative of the Lanzarote Committee). Therefore, despite not having specific legislation regarding the live-streaming of child abuse online, there are professionals that oppose the necessity of new specific and clear legislation criminalizing this phenomenon.

Thinking about it, CRC which is the most universally ratified legal instrument obliges all states to protect children from any kind of violence. OPSC, Lanzarote Convention, and the EU Directive provide even more detailed obligations toward the states, accompanied also with definitions. Many cooperation initiatives for joint police efforts in international investigations also exist, having resulted in many successful operations. But, first of all, when talking about the sufficiency of existing legislation, it should be pointed out that the existing legislation tackles mainly the commercial sexual exploitation of children online, such as the commercial trade of child abuse content, but it leaves highly unregulated cases of noncommercial online child sexual exploitation, such as peer-to-peer exchange of child abuse content. While law enforcement focus extensively on the commercial side of the crime, the noncommercial side faces a huge growth passing unnoticed and being very difficult to trace by law enforcement both because of the investigative challenges and because of the lack of proper legislation.

Secondly, despite existence of international legislation, there is a persistent problem of harmonization of national legislation addressing the online sexual abuse and sexual exploitation of children, and even though most countries are parties to the international treaties on the area, such as the CRC and the Lanzarote Convention, there are still many of them that do not meet even the minimum requirements of online child protection in terms of substantive criminal law (Carr and Hilton 2011). This logically opens many pathways for child sex abusers to sexually exploit and abuse children. It is already a known phenomenon that many criminals take advantage of the legal loopholes among legislations of various countries to sexually abuse children in those countries (Carr and Hilton 2011). For instance,

criminals from countries with strict legislation regarding online child protection from sexual abuse seek countries which are known to lack such legislation or that have weak enforcement mechanisms to sexually abuse and exploit children (Carr and Hilton 2011). Such is the widespread phenomenon of live-streaming of child abuse which arose especially because of these existing loopholes between countries, which lead to customers from European countries, the USA, and Australia to locate poor families in Asian countries, such as the Philippines, and convince them to sell their children online for live-streamed sessions of sexual abuse (see a case of a criminal from Australia paying for live-streaming of child abuse from the Philippines. Available at <http://www.abc.net.au/news/2016-09-07/predators-using-internet-to-direct-live-online-sex-abuse/7819150>).

Therefore, there is a strong need to rapidly close those gaps and loopholes between legislations of different countries. To fulfil general obligations of protecting children from violence and sexual abuse arising from existing international legal instruments, there is a need for new legal instruments which would cover the missing areas of the current legislation and close the loopholes created by the technological developments and abused by global criminals.

Nevertheless, it should be kept in mind that introducing new legislation should be followed by proper enactment and interpretation of that legislation in order to have the most effective results in the protection of children from the sexual abuse online. Legislation may be perfectly drafted, but its effectiveness is highly dependent on the way judges use and interpret it in courts. From the analyses of various cases of live-streaming that went to court in the European countries that were mentioned in this study, it results that in the lack of a specific legislation clearly referring to the phenomenon of live-streaming as a stand-alone offence, different judges have different ways of understanding and using the existing legislation in sentencing cases of live-streaming of child abuse.

Despite countries having more or less similar legislation, criminalizing the same criminal offences regarding the sexual abuse and sexual exploitation of children in the online world, having as basis the international and regional legal framework, judges tend to interpret it in various different forms. For instance, while in Italy the phenomenon of live-streaming was interpreted as a form of online child prostitution, in Sweden it was considered as rape whereas in the UK as sexual assault. These differences are noticeable not only from country to country but also within the same country. For instance, not all Italian judges agree on the applicability of prostitution laws in the online world and not all Swedish judges agree that the offence of rape can be committed also in distance, despite the lack of physical contact between the abuser and the victim. This lack of harmonization of legal interpretation causes many problems in that it prevents the unification of responses toward the phenomenon of live-streaming. The lack of a unified response toward this phenomenon, especially when the responses are so different from each other, with the crime being given very different interpretations, causes huge problems in cross-border cases. Even though the dual criminality for offences of sexual abuse against children is generally waived, other issues of cooperation related to investigation, prosecution, and sentencing could potentially arise.

A Need for New Legislation

As it was pointed out previously, some of the main international and regional legal instruments provide a sufficient legal basis for states to develop new legislation tackling the phenomenon of live-streaming of child abuse. Nevertheless, the analyses of some European legislations show that these states feel somehow reluctant in fully implementing existing treaties, either leaving completely aside some obligations imposed by the international legal instruments or using their right to make reservations to certain provisions of the treaties. It is worth mentioning here the failure of Italy to comply with the Article 5(3) of the EU Directive, by lacking any kind of legislation regarding the criminalization of knowingly obtaining access to child pornography through the ICT (Piccotti 2012). As a Member State of the EU, Italy is obliged to implement EU law into its national legislation. Since EU Directives have a binding effect on its Member States, it can be concluded that Italy has in this case failed to fully implement the EU Directive, therefore failing to comply with the EU law.

Another example is the long reluctance of the UK to ratify the Lanzarote Convention. Having signed the convention since 2008, the UK finally decided to ratify it only 10 years after, in 20 June 2018 (see UK Government News. Available at <https://www.gov.uk/government/news/uk-government-ratifies-lanzarote-convention-to-tackle-child-sexual-exploitation>). Despite having at last ratified the Lanzarote Convention, leading to harmonization of legislation and further cooperation, in less than 1 year from now, after Brexit, the UK will no longer be obliged to comply with the EU law; thus it will no longer be obliged by the EU Directive which prevents the right of countries to put reservations on any of its provisions. Since the UK has not yet transposed the provision regarding pornographic performances, it will no longer be obliged to do so, taking into consideration that even though Lanzarote Convention has the same provision, states are allowed to make reservations to it. Thus, ratifying the Lanzarote Convention does not bring any change for the UK in terms of legislation regarding the sexual abuse and sexual exploitation of children.

Besides the reluctance of the countries to ratify or implement the provisions of international treaties into their national legislation, it is important to highlight as well that international and regional treaties themselves remain inconsistent to a certain extend and provide loopholes for offenders who demand pay for or view live-streaming of child abuse on the Internet. The absence of clear legal regulations causes victims to fall out of the proper protection and offenders to escape the law or to be prosecuted for other similar but not identical offences rather than for the specific criminal actions undertaken by them.

The inconsistencies become even bigger among national legislations. It is worth mentioning here the inconsistencies in substantive law regarding the notion of “child,” the age of consent for engaging in sexual activities, the definition of sexual abuse, and the definition of what constitutes production and possession of pornographic material. Whereas as it regards cross-border investigations and prosecutions, the inconsistencies cause many difficulties for law enforcement agencies to cooperate with each other, especially at it regards the transfer of information

and access to electronic evidence matters, without relying heavily on Europol and Interpol for the coordination of their activities. These inconsistencies that hinder the quick flow of investigations have led to a proposal by the European Commission in April 2018 on the adoption of a new Regulation and a Directive providing simplified procedures for an easier and faster access by the police and judicial authorities to information on electronic evidence in cross-border investigations (see European Commission, E-evidence – cross-border access to electronic evidence. Available at https://ec.europa.eu/info/policies/justice-and-fundamental-rights/criminal-justice/e-evidence-cross-border-access-electronic-evidence_en).

There is a need to recognize that live-streaming of child abuse is much more than a sexual act, as it involves the transmission of that sexual act of abuse on the Internet to an audience who is ready to pay for viewing it and in cases of commercial live-streaming of child abuse it involves the manipulation of the child to make the child compliant with the demands of the viewer(s).

The fact that the child victims, thus also the crime scene, are on the other side of the world from the viewer but that ICT enables the offender to procure their sexual abuse should not be considered as a mitigation for the viewer of the abuse. On the contrary, it should be considered an aggravation as it shows the ability of the perpetrator to identify and acquire victims in any parts of the world, proving also the offender's persisting intent to commit the crime and the level of planning for committing the crime.

Rescuing victims is a priority, but if there are no legal grounds on which to investigate and prosecute the ones purchasing these services, the job is done only partially, and the phenomenon will never stop. Tackling the demand should be the starting point not the end point which most of the times remains unsolved. If there is no demand, there is no supply. As long as there will be demand, no matter what measures are taken to detect and rescue the victims, there will always be a supply.

There is a need for new laws which incorporate harder sentences. Sometimes viewers escape the prison with just a fine, and even the fine in certain cases is ridiculous (a man in Australia got fined US \$500 for receiving explicit images of children from the Philippines, which certainly was a pre-negotiation for a live-streaming of the children performing sexual acts. See <https://www.straitstimes.com/asia/se-asia/philippines-urges-tough-global-action-on-cyber-sex-trafficking-of-children>). Learning about such soft punishment of child sex offenders, very disproportionate with the harm caused to victim and especially considering the vulnerability of the victim because of their age, is so disheartening. Such soft punishments may even have the opposite result of what they are meant to have. Knowing the very few possibilities of getting caught because of the nature of the Internet which guarantees anonymity, and moreover, knowing that even if they get caught, they will escape prison with just a fine or have a very low prison sentence, can influence in the increase of these crimes, leading more and more child sex offenders to turn to the Internet for sexual abuse of children, instead of committing offline offences. Harder sentences should be imposed not only for the sentencing of the facilitators but also for the viewers who demand the live-streaming of child abuse. Higher sentences would influence in lowering the demand.

States are and should be held responsible for protecting their citizens from any kind of existing and new crimes through enacting legislation and adopting effective investigation and prosecution methods for the offenders. Such an obligation of states to effectively punish serious crimes arises also from the Article 3 of the European Convention of Human Rights which prohibits torture or inhuman or degrading treatment. This is an unlimited right which causes a positive obligation toward states to enact adequate and effective substantive and procedural criminal laws to protect their citizens from any kind of serious crime. As interpreted by the European Court of Human Rights (ECHR) (*MC v Bulgaria*: ECHR), this provision does not apply only to torture and inhuman or ill treatment caused by public officials but also when such crimes are committed by private individuals. As such, in *MC v Bulgaria* case, the court declared that “states have a positive obligation inherent in articles 3 and 8 of the Convention to enact criminal-law provisions, effectively punishing rape and to apply them in practice through effective investigation and prosecution” (*MC v Bulgaria*, para.153). Evidently, the ECHR has considered rape as a crime comparable to torture or inhuman or degrading treatment and therefore regulated under Article 3 of the convention. Similarly, taking into consideration the gravity of the crime of live-streaming of child abuse, which besides rape includes the transmission of the acts of rape live over the Internet for others to view on real time, it may be said that live-streaming could be treated as a kind of torture and inhuman and degrading treatment done by private individuals. States should be held accountable under Article 3 of the European Convention on Human Rights to enact effective criminal provisions to punish the phenomenon of live-streaming and to effectively apply them in practice through the use of effective and appropriate investigative methods and tools and manage to successfully prosecute offenders of such crimes. Besides *MC v Bulgaria* case, there have been many examples of states being held responsible for violation of human rights on the grounds of omitting or failing to provide sufficient protection to the most vulnerable of their citizens, the children, especially in cases related to child pornography and sexual abuse (see *X and Y v Netherlands* 1985; *Söderman v Sweden* 2013). Therefore, a new instrument addressing the phenomenon of live-streaming of child abuse which would address all aspects of the crime would be a potential solution. Such an instrument would have to take into account all the factors fostering the phenomenon of live-streaming around the world, such as poverty, technology, social norms, and many other factors. Therefore, an effective legal instrument would be one based on intersectionality, on high international cooperation, and on multi-stakeholder and cross-sectoral cooperation both at national level and across borders. Such legislation should abandon the use of terms such as “pornographic performances” or “pornographic shows” to refer to live-streaming of child abuse since such terms make one think of artistic performances, giving a sense of legitimacy and normality to the phenomenon. The legal term referring to live-streaming of child abuse should depict the real phase of the crime, and not make the crime seem milder. Many international and national organizations, institutions, and even countries – the UK has even stopped using the term “child prostitution” from its legislation – do not use the term “pornography” anymore when referring to images of children with a sexual nature. The same stance should be held toward the term “pornographic performances” as well.

Another potential solution would be the effective functioning of reporting (Markovich 2017) and monitoring mechanisms for the major international and regional instruments on the field (Carr and Hilton 2011). Considering that many countries still fail to implement into their national laws the provisions of international and regional legislation they are part of, effective reporting mechanisms would strengthen the sense of state responsibility against violations of human rights by failing to protect their citizens. Italy is an example of a country failing to enact legislation criminalizing the knowingly obtaining access to child pornography through the ICT. In other words, the absence of an adequate legislation to criminalize the viewing of child abuse images on the Internet makes Italy responsible under both the EU Directive and the Lanzarote Convention for failing to protect children from such a crime. But so far, there has been no reporting against Italy for failing to comply with its positive obligations under international legislation of this matter.

The lack of proper monitoring mechanisms and sanctioning systems for failure to comply with international legislation causes lack of harmonization despite countries being part of the same international treaties. For instance, according to the 8th report of the International Center for Missing and Exploited Children, a globally operating NGO focusing on the eradication of child sexual abuse both online and offline, as of 2016, 35 countries out of 196 still do not have any kind of legislation addressing child pornography, 50 countries do not criminalize even the possession of child sexual abuse images, and 26 countries do not criminalize the sexual abuse and sexual exploitation of children through the ICT (ICMEC 2016), despite being part of the CRC and other international and regional treaties on the matter. No measures are taken against these countries for failing to comply with the basic fundamental rights enshrined in the international treaties they are part of.

While following the approach of interpreting the legal provisions broadly enough as to cover the new phenomenon of live-streaming of child abuse might be the most comfortable solution, one of the main principles of criminal law, the principle of legality (*Nullum crimen, nulla poena sine lege*), prevents such an approach. Based on this principle, enshrined in Article 15 of the International Covenant on Civil and Political Rights and Article 7 of the European Convention on Human Rights, no one may be convicted or punished for an act or omission that did not constitute a criminal offence under national or international law in existence at the time it was committed (International Covenant on Civil and Political Rights, Art. 15; European Convention on Human Rights, Art. 7). This purpose of this principle is to ensure that legislation is specific and predictable in order for people to reasonably foresee the legal consequences of their actions (Gallant 2008). Associated with this principle is also the principle of specificity/certainty (*nullum crimen sine lege certa*), which requires that the definition of the proscribed act be sufficiently precise (see: Kokkinakis v Greece, para. 52). The principle of specificity is directly related to the other principle, that of the prohibition of analogy, which required the definition to be strictly proscribed by the law, in order for the act to be considered a crime. Therefore, a judge cannot apply a provision beyond its wording or extend a precedent through the creation of a new unwritten crime (Max Planck Institute 2010).

Criminalizing live-streaming is required also as a response to technological developments, particularly private browsing sessions, streaming facilities, and encryption (Horsman 2018). These technologies allow individuals to access live-streaming without leaving sufficient evidence to be prosecuted for current offences. There is no need to poses child abuse material anymore, in order to view it. And technology has gone so far as to make possible the viewing of “fresh” child abuse material on real time, while the abuse is happening, instead of viewing material that already exists on the Internet. This possibility of viewing a crime happening in real time gives the viewer the opportunity to take an active role in the sexual abuse, by communicating with the hand-on abuser and giving instructions on what kind of abuse to perform. And these activities hardly leave any traces on the devices of the offenders (Horsman 2018).

Having a more specific criminal offence tackling the live-streaming of child abuse would lead to more effective regulatory strategies, addressed toward this specific type of offence, with a potential to increase the number of identifications of child victims. Criminalizing live-streaming of child abuse can make it possible to interrupt the dissemination of child sexual abuse material online, and this may also affect in the number of individuals who possess and disseminate this material further in cases when the viewer records the stream. An arguable point is that those who seek to view live-streaming online might then want to physically abuse children themselves (Babchishin et al. 2015) and maybe to even produce live-streamed material themselves. While there is no evidence to this argument yet (Seto et al. 2010), such a possibility should not be neglected.

Technological developments change fundamentally the shape of an offence (Horsman 2018). Live-streaming does not fall under the existing offences, and it should be a stand-alone offence. If live-streaming is not criminalized, the demand for it remains unaddressed. When technology makes possible to view fresh child abuse material on real time, it is possible that soon we will witness a shift from possession and viewing of already existing CSA, to viewing live-streamed material without leaving any trace on the devices, thus with offenders of such acts being more protected. A specific provision on live-streaming of child abuse would serve as a deterring effect to those involved or planning to get involved in this kind of criminal activity.

Criminological research has shown that if the certainty of being apprehended for a crime is high, fewer people would get involved in illegal behavior (von Hirsch et al. 1999; Nagin and Pogarsky 2001; Wright 2010). In other words, if the certainty of being apprehended for a crime is high, fewer people would get involved in illegal behavior. But in the case of the live-streaming of child abuse, the lack of a clear specific legal provision criminalizing the phenomenon increases the belief in potential offenders that they can escape the law and will not be apprehended for their actions. If potential offenders, both the demanders and the suppliers, would believe that sanctions for committing the offence of live-streaming of child abuse are more certain, they would be less likely to engage in such an illegal behavior.

In order for deterrence to be impactful, offenders must be aware of sanction risks and consequences before committing the crime (Wright 2010). In this regard, having

a specific offence for the phenomenon of live-streaming, with a clear description of the actions criminalized, would raise the awareness of the general public on the risks of being apprehended for such criminal actions. This would simultaneously increase the deterrence effect on potential offenders of live-streaming of child abuse. Having a clear stand-alone offence on the phenomenon of live-streaming would increase the probability of apprehension, resulting in a more robust deterrence effect, thus reducing the live-streaming of child abuse crime rate.

While having specific and clear substantive criminal law in place has a strong effect in increasing the certainty of being apprehended for committing a crime, this approach should be accompanied with high rates of offenders being punished for such crimes. Such an evidence-based approach of laws being actually enforced would further increase the certainty of punishment (Wright 2010), by improving the likelihood that criminal behavior of live-streaming of child abuse would be detected. Subsequently, an increased certainty of being punished for this criminal activity would have an even more robust deterrence effect on potential offenders of live-streaming of child abuse.

Conclusions

Internet has a powerful influence in the public education and private economies. In the recent years, its importance in the education of children all over the world has grown enormously. But as every other phenomenon, the easy access to the Internet creates a great number of concerns that should not be neglected. The extent of child sexual abuse and sexual exploitation has increased over the years, and since the creation of Internet and its rapid and huge developments over the past years, the nature of child sexual abuse and sexual exploitation has changed dramatically. Internet has opened new pathways for exploitation of children, by transferring the on-site, hands-on sexual abuse and sexual exploitation into the online world and easily giving it a global dimension.

The latest emerging trend as a result of the exploitation of this technology, which at a dramatically rapid speed has been reported to have become an established reality, is the live-streaming of a child being sexually abused, in front of a camera for an audience which has requested to view the live abuse, usually in exchange for a certain payment. The harm and damage that can be caused to a child through online live-streaming of child abuse is not less than offline child abuse, even in the case of lack of physical contact with the sexual offender.

Governments should understand the risks of live-streaming of child abuse and take measures to address it in the most effective way possible. Passing and implementing legislation that establishes live-streaming of child abuse as a stand-alone offence, and enables to identify, locate, investigate, and prosecute online offenders of live-streaming effectively, are crucial steps toward preventing the online live-streaming of child abuse and creating a safer online environment for children. Existing laws do not explicitly address the offence of live-streaming of child abuse but address specific parts of this conduct through general provisions that cover

offences of child pornography, child prostitution, rape, etc. As it has been shown in the examples analyzed through the chapters of this research, judges and prosecutors, in the lack of an explicit provision criminalizing the activities of live-streaming of child abuse, have used the provisions of child pornography offences, child prostitution, and even rape offences to sentence the viewers of the live-streaming. While this approach may be appropriate, one should bear in mind the different methods of investigation of these offences and thus different needs for training, establishing specialized units and other measures, as well as the difference in the impact on society. Thus, states might want to consider making a distinction in the sanctioning regime based on risks, dimension, and consequences when offences such as rape, child pornography, and child sexual abuse get transmitted live on the Internet in front of an audience who may or may have not payed to watch the abuse happen live and be able to take an active role in that abuse by giving instructions to the hand-on abuser or to the child victim on the abusive acts to be performed.

International legislation is not sufficient to fight the rapidly increasing crime of live-streaming of child abuse. Even though current instruments do aim, in varying degrees to combat the sexual exploitation and sexual abuse of children through the Internet, no instrument currently exists to unilaterally tackle Internet sexual exploitation and sexual abuse of children in its entirety, covering all its various forms in one single document. Nevertheless, the existing instruments, especially the Lanzarote Convention and the EU Directive, provide the basis for creating new legislation against this phenomenon. These two instruments, together with the CoE Budapest Convention and the UN OPSC, provide a comprehensive blueprint for a new instrument to specifically address online child sexual abuse and sexual exploitation with all its various forms. Online live-streaming of child abuse is a transnational phenomenon. Comprehensive national legislation harmonized with international standards is a prerequisite for effective law enforcement cooperation to protect children and investigate and prosecute offenders. In a globalized interconnected technological age, it is vital to ensure that children's interests and rights are protected online in the same way they are in all other aspects of life.

References

- ABC News. Retrieved from: <http://www.abc.net.au/news/2016-09-07/predators-using-internet-to-direct-live-online-sex-abuse/7819150>. Last accessed 2 July 2, 2018
- Babchishin KM, Hanson RK, VanZuylen H (2015) Online child pornography offenders are different: a meta-analysis of the characteristics of online and offline sex offenders against children. *Arch Sex Behav* 44(1):45–66
- Bakirci K (2007) Child pornography and prostitution: is this crime or work that should be regulated? *J Financial Crime* 14:5–11
- Bernasconi C (2017) I rischi insiti nell'utilizzo del Web come possibile strumento di sfruttamento sessuale dei minori: l'attuazione in Italia della Convenzione di Lanzarote e il potenziamento degli strumenti repressive. *Annali online della Didattica e della Formazione Docente* 9(13/2017):59–71
- Brockman J (2006) Child sex as internet fare, through eyes of a victim. *New York Times*

- Carr J, Hilton Z (2011) Combating child abuse images on the Internet: international perspectives. In: Davidson J, Gottschalk P (eds) Internet child abuse: current research and policy. Routledge, Oxfordshire, pp 52–78
- Cass. pen., sez. III, 12.2.2003, n. 13039, CED, 224116
- Cass. Pen. Sez. III. 08.06.2004 No. 25464
- Council decision of 2010 to combat child pornography on the internet
- Council of Europe Convention on Cybercrime, CETS No. 185, Budapest, 23.XI.2001
- Council of Europe Convention on the Protection of Children against Sexual Exploitation and Sexual Abuse, CETS 201, Lanzarote, 25.X.2007
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on combating the sexual abuse and sexual exploitation of children and child pornography, and replacing Council Framework Decision 2004/68/JHA
- European Commission, E-evidence – cross-border access to electronic evidence. Retrieved from: https://ec.europa.eu/info/policies/justice-and-fundamental-rights/criminal-justice/e-evidence-cross-border-access-electronic-evidence_en
- European Convention on Human Rights
- European Parliament resolution of 14 December 2017 on the implementation of Directive 2011/93/EU of the European Parliament and of the Council of 13 December 2011 on combating the sexual abuse and sexual exploitation of children and child pornography (2015/2129(INI))
- Europol, Internet Organized Crime Threat Assessment, IOCTA 2015
- Europol, Internet Organized Crime Threat Assessment, IOCTA 2018
- Explanatory report on the Council of Europe Convention on cybercrime
- Explanatory report on the Council of Europe Convention on the protection of children against sexual exploitation and sexual abuse
- Gallant KS (2008) The principle of legality in international and comparative criminal law. Leiden, Cambridge University Press
- Gillespie AA (2012) Child pornography in international law. In: Quayle E, Ribisl KM (eds) Understanding and preventing online sexual exploitation of children. Routledge, London
- Gottschalk P (2011) Characteristics of the internet and child abuse. In: Davidson J, Gottschalk P (eds) Internet and child abuse: current research and policy. Routledge, Oxfordshire, p 27
- Horsman G (2016) The challenges surrounding the regulation of anonymous communication provision in the United Kingdom. Comput Secur 56:151–162
- Horsman G (2018) Combatting those who intentionally access images depicting child sexual abuse on the internet: a call for a new offence in England and Wales. Comput Law Secur Rev 34:111–124
- International Centre for Missing and Exploited Children (2016) Child Pornography: Model Legislation and Global Review, 8th edn. ICMEC, Alexandria
- International covenant on civil and political rights
- International Labour Organization's convention concerning the prohibition and immediate action for the elimination of the worst forms of child labour
- Internet World Stats. Retrieved from: <http://www.internetworldstats.com/top20.htm>
- Kokkinakis v. Greece [Judgment] [ECHR] 25 May 1993
- Livingstone S, Carr J, Byrne J (2015) One in three: internet Governance and Children's Rights. p 7. Global Commission on Internet Governance, Paper series no. 22 Nov 2015 at: https://www.cigionline.org/sites/default/files/no22_2.pdf. Last accessed on 7 Jan 4, 2018
- Markovich E (2017) Two clicks away: an analysis of the offence of viewing child sexual abuse material on the internet. Lund University. Master thesis
- Max Planck Institute for Comparative Public Law and International Law (2010) Max Planck encyclopedia of public international law. Oxford University Press, Heidelberg
- MC v Bulgaria [Judgment] [ECHR] no. 39272/98, 4 Dec 2003
- Merdian HL, Curtis C, Thakker J, Wilson N, Boer DP (2013) The three dimensions of online child pornography offending. J Sex Aggress 19(1):121–132

- Nagin D, Pogarsky G (2001) Integrating celerity, impulsivity, and extralegal sanction threats into a model of general deterrence: theory and evidence. *Criminology* 39(4):865
- Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography
- Piccotti L (2012) Preparatory colloquium session II, Report-Italy
- Promotion and Protection of All Human Rights, Civil, Political, Economic, Social and cultural rights, including the right to development, report of the special rapporteur on the sale of children, child prostitution and child pornography. Najat M'jid Maalla UN Special Rapporteur 2009 A/HRC/12/23. Retrieved from: <https://documents-ddsny.un.org/doc/UNDOC/GEN/G09/146/27/PDF/G0914627.pdf?OpenElement>. Last accessed on 7 Jan 4, 2018
- Rättelse/komplettering Dom, 2017-11-30. Uppsala Tingsrätt (District Court of Uppsala)
- Schermer BW, Georgieva I, Van der Hof S, Koops BJ (2016) Legal aspects of sweetie 2.0. TILT, Leiden/Tilburg
- Seto M et al (2006) Child pornography offenses are a valid diagnostic indicator of pedophilia. *J Abnorm Psychol* 115(3):610–615
- Seto MC, Hanson RK, Babchishin KM (2010) Contact sexual offending by men with online sexual offenses. *Sex Abus.* <https://doi.org/10.1177/1079063210369013>
- Söderman v Sweden [Judgment] [ECHR] no. 5786/08, 12 November 2013
- Straits Times News. Retrieved from: <https://www.straitstimes.com/asia/se-asia/philippines-urges-tough-global-action-on-cyber-sex-trafficking-of-children>
- Supreme Court of Cassation website, The functions of the Court. Retrieved from: http://www.corte-dicassazione.it/corte-di-cassazione/it/funzioni_della_corte.page. Last accessed: 6 Apr 2018
- Taylor J (2011) Policing social networking sites and online grooming. In: Davidson J, Gottschalk P (eds) Internet and child abuse: current research and policy. Routledge, Oxfordshire
- Taylor M, Quayle E (2003) Child pornography: an internet crime. Brunner-Routledge, New York
- Terre des Hommes (2018) The dark side of the internet for children. Online child sexual exploitation in Kenya – a rapid assessment report
- The Local SE. Retrieved from: <https://www.thelocal.se/20171201/swede-convicted-of-online-rape-of-children-from-us-canada-and-scotland>. Last accessed 28 May 2018
- The Local SE. Retrieved from: <https://www.thelocal.se/20171201/swede-convicted-of-online-rape-of-children-from-us-canada-and-scotland>
- The Local SE. Retrieved from: <https://www.thelocal.se/20170928/swede-accused-of-sexually-abusing-children-online-in-us-uk-and-canada>. Last accessed 28 May 2018
- UK Government News. Retrieved from: <https://www.gov.uk/government/news/uk-government-ratifies-lanzarote-convention-to-tackle-child-sexual-exploitation>
- UN Convention on the Rights of the Child (1989)
- UN Data. Retrieved from: <http://data.un.org/Data.aspx?d=ITU&f=ind1Code%3AI99H>
- US Department of Justice. Retrieved from: <https://www.justice.gov/opa/pr/two-men-convicted-engaging-child-exploitation-conspiracy>. Last accessed 28 May 2018
- von Hirsch A, Bottoms A, Burney E, Wikstrom P-O (1999) Criminal deterrence and sentence severity: an analysis of recent research. Hart Publishing, Oxford
- Wolak J et al (2004) Internet-initiated sex crimes against minors: implications for prevention based on findings from a national study. *J Adolesc Health* 35:424.e11
- Wright V (2010) Deterrence in criminal justice: evaluating certainty vs. severity of punishment. The Sentencing Project, Washington, DC
- X and Y v Netherlands [Judgment] [ECHR] no. 8978/80, 26 March 1985



Feminized Digital Sociality and Online Philanthropy

13

Radhika Gajjala and Kaitlyn Wauthier

Contents

Part I	226
Part II	227
Part III	228
The Internet/Digital as a Potentially Global Socio-Political Space	229
Nattering on the Net to Digital Housewives	230
Feminized Sociality and Online Philanthropy	230
Philanthropy and Affective Labor	231
Case Studies	233
Conclusion	236
References	236

Abstract

Feminized forms of digital labor are coded as relational/interpersonal and learned mostly defined through women's social spaces offline. In this chapter, we examine how this feminized digital labor plays out at the intersection of digital financialization and digital philanthropy at microfinance sites such as kiva.org.

Keywords

Gender · Digital Financialization · Philanthropy · Digital Labor · Feminized

This chapter notes the importance of feminized digital sociality and its role in online microfinance platforms such as kiva.org, which are in fact online philanthropy startups (Gajjala 2017). Thus, this chapter makes connections between digitally mediated social subjects and economic subjects in order to illustrate feminized digital sociality's

R. Gajjala (✉) · K. Wauthier
Bowling Green State University, Bowling Green, OH, USA
e-mail: gradhika2012@gmail.com; kewauth@bgsu.edu

impact on the way in which digital financialization operates. **Part I** briefly reviews the literature on women's reproductive labor in domestic space as it connects to feminized Internet sociality. **Part II** lays the groundwork connecting feminized sociality and digital labor, and **Part III** describes particularities of how this connectivity plays out in relation to select examples of affective networking on and through kiva.org.

Part I

In using the Internet and related wireless gadgets, we produce ourselves as Internet/Mobile/Digital subjects along a continuum of access – one that moves through degrees of inclusion and exclusion. Through this connectivity, we become global economic and consumer subjects through a global ethos that centers digital technologies as responsible for enhanced economic productivity.

The success of technological interfaces and gadgets are predicated on feminized forms of digital labor that are crucial to consumer citizenship, offshore service work, and digital relational care work. When we talk of “feminized forms of labor,” we mean user/consumer labor – labor that is doing the interactive human relations side of the work. We refer to these forms of work as feminized since this form of work has been considered women’s work and located in the reproductive domain.

These feminized forms of digital labor enter the computer space through relational/interpersonal sociality mostly defined through women’s social spaces. This kind of labor involves much human negotiation and creativity from the margins – attempts to make the interface work in diverse contexts despite infrastructural coded features that were/are clearly not always inviting of women and groups on the margins of society. These infrastructural coded features that we refer to are not some mystical, esoteric out-there structure, but coded infrastructures and user interface designs shaped by software engineers and coders who build these sites. While it may be true that on the infrastructural end, code “works to structure the boundaries, as well as regulate the flows, of Internet traffic,” and a “key part of this regulation is in the actual work that code does, of creating, ordering and ultimately giving meaning to digital artifacts” (Cheney-Lippold 2011, p. 166), code is neither something mystically created outside of human involvement nor is it used by people without agency and decision making power of some sort. The limits of infrastructural design and interface access to diverse users are itself a labor issue. Lack of diversity in hiring practices and incentive for initiative in design and code intervention exemplify organizational culture and labor care and rights issues. When women and people of diverse backgrounds are not only invited into the labor pool of software coders, but also are given incentives and benefits to ensure that they intervene on behalf of inclusion rather than automated repetition and blind standardization, user access is also diversified. Diversity in the computer software labor pool and the empowerment of the software laborers from diverse backgrounds thus leads to diversity in coded interface and algorithms – it is as simple as that.

On the consumer labor end of the spectrum, it is diverse users who create value for the product through the social and community building work that contributes to

the success of any platform, social media tool, or mobile app. There is an imbalance, then, in terms of diversity of labor. The service labor in the technology sector and consumer labor in general is in actuality far more diverse than the software engineering labor force. It is therefore easier for technology companies and startups to leave the diversity work to the unpaid consumer laborers. When we focus on issues of inclusion and access we usually ask if the margins have access to the user interface – while the real and major problem is that the margins do not have access to the space of core software design work.

Thus, the development of globally user-friendly and inclusive infrastructures that facilitate effective user friendly – and diversified – interaction actually is as much a need for successful *temporal* scalability and durability in a business as it is socially desirable for a democratic society. The question though is whether the human beings involved in setting up startups and in organizing teams to produce computer-mediated infrastructures through design and code are actually invested in scalability across time. Scalability across geography is fast in contemporary times of connected speeded marketing, but temporal scalability in terms of either product or process does not seem to be the goal of most technology based startups. We live in postdotcom startup ethos (Gajjala 2017) that emphasizes such attributes as speed and apparent novelty of product – where novelty is often defined more by the ways in which the product is marketed than in the product itself – as markers of success. Social (and even financial) durability and global inclusion are not markers of corporate and financial success even if socially they are touted as desirable corporate social responsibility values. The actual work of putting together software to make online platforms and mobile applications work is not like putting together hardware or manufacturing standardized material products; therefore, small scale do-it-yourself startup businesses seem more possible for the individual software engineer and his (often his) two or five friends.

Part II

In this part, we lay the groundwork for connecting feminized sociality and digital labor. Laboring subjects are not only shaped through our physical laboring bodies and where they work but also through the sociality that is necessary to our work. Our laboring subjectivities are also a result of how we engage with other people because of the way our work is structured, including the way our bodies and the technologies we use are situated in our physical surroundings. As we connect with and through technology, the ontology of embodiment shifts as emerging laboring/social bodies realign in relation to the environment and technologies. For those that work within environments that are perpetually connected and even produced through digital technologies, the technologies used in work generally become extensions of our bodies as well as of our personal and affective lives. This is different from the times when most wage labor – whether in farming or in factories – entailed the physical exiting of personal relational space and entering an outside space of work and work based relational spaces.

Social relations formed at work in such settings were not seen as blurred or similar in anyway with the social reproductive relations of the home space. This was also a gendered division: the default for “laborer” was “man.” Capitalist modes of production (i.e., the private ownership of capital and wage-based labor) were considered to be the masculine. Of course such dualisms emerge from social histories and economic systems when ownership of property and/or the means of production was legally and socially possible mostly for men. So even when in reality wage-based labor included women, the default laborer was male. This also allowed the characterization of women and children’s labor that was done outside of the home as “surplus” and even excess.

Thus, the economic and social theories, analysis, and policy making that followed from an examination of historical contexts of the factory system did not acknowledge this relational space of home as a directly economic productive space or the work done at home as having more than “use-value.” Thus, for instance, when social/political theorists such as Karl Marx wrote about labor and capital with a focus on transitions from cottage industry to industrialization and factory work, they binarized labor into productive and reproductive; as a result, the productive nature of labor in domestic space (mostly performed by women) was left unexamined and invisible. Marx wrote about social transformations with a focus on value production through economic activities of the worker. But as several socialist feminists including Leopoldina Fortunati, Silvia Federici, and Lise Vogel note, this articulation of reproductive labor as outside of or invisible to the capitalist production process is problematic. As Vogel (2013) contends:

Early domestic-labour theorists sought to put women’s lives at the heart of the workings of capitalism. They were among the first to intuit the coming crisis of Marxism and to begin exploring the limitations of Marxist theory. Their challenge to feminist theory and to the tradition of Marxist political economy remains... an unfinished project. (p. 197)

It is the theorizing that invisibilizes this labor and since the theorizing shapes policy, policy continues to rely on the implicitly binarizing productive and reproductive labor. The binarizing also feeds into the neoliberal impression of solitary/individualized economic activity. The implicit assumption of individuality and of the gendered nature of productive labor was already embedded in this binary. Even though the acknowledgment of the importance of reproductive labor was noted, it was articulated as outside actual productive economic relational space because it was supposedly restricted to the production of “use-value” in the home space.

Part III

We now turn to a discussion of how this labor binary plays out in the recent historical context of Internet sociality and in the specific case of kiva.org to better articulate how affective networking as a form of free, user/consumer (i.e., feminized) labor functions within online philanthropy, or philanthropy 2.0.

The Internet/Digital as a Potentially Global Socio-Political Space

In this section, we elaborate on the point about sociality and digital labor by noting the formation of relational space through computer engineer work and play modes historically. As we know, Internet technologies – the ability to connect through standardized protocols through distributed package-switched networks – came into being much earlier than it became available to the larger public. This capacity to connect became accessible to a larger public in the 1980s through systems such as the Whole Earth 'Lectronic Link (WELL). Howard Rheingold (2000) documents how WELL led to the formation of what he terms as “virtual communities.” To the average nontechnical, nonscientist, nonengineer user, the 1980s signaled the opening up of Internet as social space that facilitated the formation of communities. The Internet was simultaneously a network and a social space: it was a site of virtual community formation and a space for networked societies to emerge (Castells 2011).

Yet the cultures of Internet/digital interaction – the history framing the interpersonal and group relational patterns that persist to this day – have their origins in how computer engineers used the tools of their work as relational tools. Social spaces of work and play therefore predate the opening up of the Internet to the formation of larger virtual communities and larger networked societies. Ullman (1996), for instance, describes the computer engineer’s loneliness and how this was alleviated through patterns of computer “talk” and email exchange. These patterns and the rhythms of how the relational exchanges occurred were structured by the nature of the work they performed. Time, space (i.e., physical space of the work occupied by the body), and emotion (mental concentration) were being re-oriented and modulated through the work at the connected computer interface. Ullman (1996) writes:

Each of us had to create a particular electronic persona, and that creation had to be flexible. We had to tune it depending upon the people on the other side of the email conversation. For my part, I played a tough character to the team; a responsible contractor to the team’s boss, who had hired me; an intelligent interlocutor between the group and teams on related projects—or so I tried to be. I had to achieve comfort and skill at creating the right online persona, a prerequisite for working in a computing profession. Everything happens there: design, technical argument, professional visibility; in short, one’s working life. (pp. 24–25)

It was indeed this mix of disembodied embodiment that allowed international connectivity to open up possibilities for offshore work. Projects could be done in real-time groups without bodies inhabiting the same physical place. Bodies also developed online digital personae (handles) to make themselves flexible as co-workers across cultures and contexts. This Internet sociality of computer engineers was then opened up to the larger population of Internet users in the next decade; however, this sociality was framed as masculine because it was within a productive labor relational space. In the 1990s, writers began to challenge this perception to argue for women’s inclusion in Internet work spaces.

Nattering on the Net to Digital Housewives

In 1996, Dale Spender, while writing about the intimidating and male dominated nature of sociality on the Internet of that time, discusses communication technologies from print to computers in relation to the possibility of women's access and participation. She points to the example of the telephone and its use by women for interpersonal/relational communication. She notes how relationship work done by women is referred to as leisure interests by women themselves. She then suggests that this form of leisure activity does not always have to be performed in person because "talking on the telephone" it turns out "is one of the most commonly reported 'non-work' activities of women" (Spender 1995, p. 191). Therefore, according to Spender, women easily transition into "superb computer work," since they "already spend considerable time in cyberspace." Further, as she notes, this is relationship *work* that women are engaged in.

Twenty years later, Kylie Jarrett (2015) writes about digital/consumer labor using the rhetorical trope of "digital housewife" and argues for the economic value of feminized sociality online through the work of Marxist feminists and others who have examined the value of women's work in domestic space, drawing connections between the linked historical spaces. Thus, it is clear that in the 1990s, women's ability to participate in computer work because of their history of developing social spaces online was being argued as a skill that made them valuable computer workers. At the same time, this ability to be social in a manner similar to "gossip" and "nattering" also gave women a reason to access the Internet; thus, "nattering on the net," so to speak, became a computer access point for women. This form of sociality itself became a viable form of work/labor as the web became commercialized. Online philanthropy, online marketing, and computer-mediated service and care work drew heavily on this kind of sociality and the ability to generate and extract affective labor that resulted from such sociality. These early forms of feminized sociality, which were different (even starkly so) from the computer engineers' sociality that Ullman (1996) describes, are precursors of present day networked consumer citizens who are also consumer laborers.

Feminized Sociality and Online Philanthropy

In order to further develop our analysis of how feminized sociality as Spender describes shapes digital labor and consumption in support of digital financialization, this section turns to specific examples of this relationship that emerge on kiva.org. Kiva's digital lending and borrowing platform provides a site of analysis that allows us to tease out how feminized labor, specifically care work, and feminized consumption in ostensible private/leisure spheres create social relationships that in turn create financial relationships. Kiva's users, like those on other online philanthropy sites, use the platform – both intentionally and incidentally – to manage and modulate affect in ways that compare to gendered reproductive work (i.e., women's labor in the home space).

In trying to elaborate on this connection, but also to point to the role of Internet mediation and production of relational space, we described above a gendered sociality where feminists such as Spender advocate casual “nattering” as a way to counter the masculine identified engineer mode of sociality and make the Internet more inviting to women. This sociality transforms into what Jarrett (2015) refers to as the (consumer) labor of the “digital housewife.” This leisure space, associated with “nattering,” in turn produces forms of gendered consumer labor in a variety of spaces including online philanthropy space-based labor.

Kiva is a rich analytical site for understanding this process because of its longevity and its extensive networks across the Global South. In 2005, Matt and Jessica Flannery cofounded Kiva as “an online lending platform that allows individuals in the developed world to loan to small business people in the developing world” (Flannery 2007, p. 31). Matt Flannery describes Kiva as a partnership program between investors and entrepreneurial-minded people, despite having the ostensible attributes of benevolent paternalism-driven philanthropy. Evidencing Flannery’s claim that the platform supported a mutually beneficial financial relationship to lenders and borrowers, the Flannerys tested out their financing model during their beta launch. Friends of the Flannerys loaned money through the site to seven entrepreneurs in rural Africa (Garrard 2008). Several months later, all of the loans were repaid in full. From there, the platform continued to grow while keeping the Flannerys’ original business model.

However, Kiva remains embedded within its philanthropy 2.0 context, where images of poor individuals from the Global South proliferate the screens of potential lenders from the Global North. These images are the primary strategy Kiva uses to hail potential lenders as philanthropists-in-waiting. Paired with third-person narratives crafted by Kiva fellows (field workers) about the borrower, profiles emphasize carefully selected details about the individual’s skills, business plans, and life experiences and serve to mobilize affect and build connections between lenders and borrowers.

Philanthropy and Affective Labor

On these profiles, expressions of feeling and of connection serve as authentication of the reality of the borrower’s story – these feelings spread across lender groups and in lender profile posts, as well as in blog posts in a way that constantly recirculates and reaffirms the affective linkages between lender and borrower. Thus, this performance of connectivity between the lender and borrower serves to produce value for the borrower profile, as evidenced through the speed with which some profiles are funded over others. This production of value becomes a form of marketing wherein borrowers’ profiles play on expectations of women’s labor and sociality. Profiles that successfully mobilize affective connections between borrower and lender circulate more broadly and faster through lender networks.

Networking of affect therefore is a form of free labor (Terranova 2000) that the Kiva lenders, Kiva fellows, and others who engage the interface in a variety of ways

contribute to the process of forming community and sharing social space with each other. This networking of affect that engages the audio-visual and textual features of the digital connectivity – connecting via the mediating screen so to speak – creates and reifies knowledge about Kiva borrowers (who can then stand in for all Global South citizens) while also supporting philanthropy 2.0’s development and objective. As such, Kiva’s consumers (lenders, site visitors, etc.) participate in, and therefore perpetuate, philanthropy 2.0’s world-view that the subaltern (and their digital re-presentation) is best served through global digital financialization where both Self/lender/Global North citizen and Other/borrower/Global South digital subaltern co-inhabit online space – an ostensible level playing field. Kiva profiles, then, demonstrate through success stories that this digital market economy works for subaltern citizens who choose to pull themselves up by the bootstraps, reinforcing a larger narrative of neoliberal hyper-individualization.

These affective circuits also more directly interweave offline and online material exchanges that reveal the complex interplay of local and global interconnections: “the sticky materialities of practical encounters” (Tsing 2005, p. 2). Digital circulations intertwine with actual material exchange of goods; however, the complexities of borrowers’ stories, business ideas, and interactions with Kiva fellows are reframed to fit within the central narrative Kiva constructs of its project. The online profiles efface offline struggles between Kiva fellows and borrowers or deviations in the borrowers’ stories that do not align with the story of smooth authenticity Kiva desires. The affective networks we describe also shift materialities toward the universals of a global economy that, though far from static, are situated in colonial histories and neocolonial hierarchies of supply and demand. But at the screen interface where the lender/consumer encounters the borrower profiles and builds online networks and tagged connections and where the affective intensities invite digital giving, the platform’s interface and the strategic staging of encounters reconcile these shifts.

The “friction” – the struggle – of encounters between Westernized universals and subaltern particulars that occur in the field and what Tsing (2005) further refers to as the unmaking and making of hegemony through the friction of encounters that Kiva fellows undoubtedly encounter on a daily basis are smoothed out in the platform’s online staging and narrating. However, to be clear, friction and struggle in and of themselves do not equal resistance: the subaltern profiled on Kiva may very well be complicit in the production of herself in the ways that we describe. The question is not really about her agency so much as it is about the reproduction of colonial tropes of representation and neocolonial hierarchies in neoliberal, digital contexts that obfuscate the complexities of human encounters and relationship building in material space. Kiva profiles continue to subvert the subaltern’s agency – whether she supports or struggles with Kiva fellows – in the making of her digital representation. By crafting profiles to appeal to lenders, Kiva reaffirms Western expectations for and understanding of philanthropy 2.0 that builds on the logic of neoliberal individualism and global market capitalism. These processes remain dependent on consumerism and free labor: Kiva expertly mobilizes affect and play-like labor (such as profile tagging) within digital networks to keep lenders interested and active on their

platform. Combined, these features on Kiva's platform make possible and profitable the system of digital financialization explicated in Part I and Part II of this chapter.

Case Studies

This final section of Part III analyzes these profiles in action and gives examples of both borrower profiles and lender responses. Borrower profiles like the ones of Cecil Mariela, from Nicaragua, and Rosebud, from Uganda, are among hundreds of other similar visuals included in the “retail” or “general store” borrowers’ work categories. Profile photos like the ones we describe in this section comprise a substantial portion of Kiva’s visual capital, that is, the one represented by the digitized borrowers’ gendered and racialized bodies circulated and consumed on Kiva. In both photographs featured on their respective profiles, the two borrowers Cecil Mariela and Rosebud are portrayed standing in front of a display of various goods/items placed orderly on shelves in what appear to be small shops. Mariela wears a pair of jeans and a T-shirt, which one could easily label as Western style clothing, and Rosebud wears a white dress. The photos direct the onlooker’s (read: lender’s) gaze toward the borrower herself: Both borrowers smile brightly and communicate self-confidence in their postures as they stand in the center of their displays. The lines of their display shelves move from the edges of the photographs’ frames to a point behind each of the women, further confirming that the camera’s focus is on the women, not the specifics of their wares.

The affective investments taking shape here do not readily fit within the photographic repertoire of poverty on which traditional development paradigms rest – and which are so familiar to the viewing subjects from the Global North. The Kiva site visitor’s and potential lender’s gaze does not linger on images of rubbish dumps that overwhelm individuals with associative images of poverty, disease, and other ostensible markers of Otherness. Instead the borrowers return the lender’s gaze surrounded by their commodities for sale in a capitalist neoliberal market. Unlike the traditional development paradigmatic images that motivate charity, the images of Kiva and of philanthropy 2.0 forge a relationship between lender and borrower, suggesting that one day, the borrower will be empowered enough to move into the lender group. The technomeditated visual encounters interpellate the viewing subjects as they mark the beginning of an almost-identification process whereby the lenders recognize and empathize with a familiar version of the self-motivated entrepreneurial subject produced/circumscribed by the same Western neoliberal ideology of prosperity and empowerment to which they have been allegiant.

The profiles’ textual narratives become explanatory footnotes to the initial visual impact, similar to “the process by which potentially ‘wild’ affect is tamed, turned into something people can recognize, talk about to each other and communicate as ‘domesticated’ emotion” (Wetherell 2013, p. 354). Cecil’s profile visitors may read that she “is an enterprising, charismatic woman who starts every day with lots of energy, greeting all of the customers who come to her store with a big smile. She started with a grocery store, and over the years decided to branch out into selling

clothing and cosmetics. She now dedicates herself heart and soul to both businesses” (<https://www.kiva.org/lend/1295186>). Those attracted to Rosebud’s profile will read that she is married and is a mother to school-aged children. They learn that she sells products to tourists near the national park and that she started her business by saving the little money she earned from farming. These carefully crafted textual narratives close down the possible affective responses to the women’s photographs, suggesting that the women are admirable for their ventures and are therefore worthy recipients of visitors’ funds.

The goal of transforming visitors into lenders is evidenced by the textual descriptions of why the women want and how they will use the loans. For example, Cecil “will [...] buy merchandise for her small clothing store so that she can offer more variety. She plans to buy blouses, dresses, skirts, pants, creams, makeup, and accessories. In the future, she would like to set up a space in her house to separate her two businesses” (<https://www.kiva.org/lend/1295186>). Likewise, Rosebud wants to expand her business and open new outlets in order to secure her children’s education through university. Therefore, she requested a loan in order to add more stock into her business (<https://www.kiva.org/lend/1234711>). Both narratives supplement the representational process that began with the two borrowers’ profile photos. They provide details that consolidate the identification process and that further prompt viewers to become lenders.

While perusing narratives about borrowers on Kiva, viewers usually encounter two types of attributes of borrowers that help form affective linkages between viewers and borrowers. On one hand, viewers learn that borrowers are clever, for example, Cecil is a clever businesswoman who both enthusiastically interacts with her customers and “dedicates herself heart and soul” to her business. This portrayal speaks to the business attributes – confidence, charisma, persistence, among others – Cecil possesses that are valued by potential lenders from Westernized neoliberal contexts. On the other hand, Kiva visitors learn that Rosebud is “a married woman with children who all attend school in Kasese Uganda” and that she hopes to expand her business to continue supporting their education. Highlighting these life experiences resonate with lenders’ own standpoints: as lenders’ profiles demonstrate, there are many married women with children and with the ensuing responsibilities who lend to Kiva borrowers.

Lender networks then circulate affective responses to profiles like those of Cecil’s and Rosebud’s, as they enter into a philanthropy 2.0 relationship with both the borrowers and Kiva itself. Lenders voluntarily form groups through the platform and their interactive sociality is visible online. Consumers create their own narratives of the borrowers, choosing words that translate their affective responses into emotional connections to the borrowers and other lenders. For example, requests for “help” and to “join” are commonly made in lending group postings, reminding lenders of supporting a cause as a networked group. One post made by “M” follows as an example:

I just found a bonus loan in my account—maybe from the agricultural promo last week—and since bonus loans are burning holes if not used immediately, I lent it to this Thanh Hoa group

with the poetic name of “Love Song Group.” The life of the featured borrower is, however, less poetic as she became a widow at young age and has to children to take care of. She wants to buy a calf to raise and dreams of giving her children a better future and a good education. 1,525\$ needed in 4 days. Please join me on singing a love song!

Less than half-an-hour later, “S” took “M” up on her call to action:

I found a bonus credit in my account as well—have no idea why, but was happy to have it. I’ve joined you on Love Song Group’s loan but used my credit on Benkadi Group (RMCR, 8 months) in Mali that was in page 2, 35% raised with another \$3100 needed in the next 10 days.

About an hour later, “S” makes reference to her fellow team member’s appeal as “piling on” and described the act as “helpful.” Interaction between people is at the essence of each post. None of the people interacting are borrowers, however.

Lenders become prosumers who, apart from contributing to consumption processes on Kiva, willingly participate and collaborate in crowdsourcing content creation on Kiva through tagging. Lenders categorize borrowers’ profiles by assigning corresponding specific clickable (hyperlinked) tags (terms). This process further closes down the potential affective responses to profiles on the site – illustrating how profiles are differently valued as consumable products – and is a form of free labor. The argument that “free labor may be meaningful and rewarding” (Jenkins et al. 2013, p. 57) seemingly finds convincing evidence on Kiva, where assigning tags to loans (e.g., “Orphan,” “Single,” “Refugee”) may reflect lenders’ personal philanthropic aspirations: Who do they find value in supporting? How do they think other lenders will respond to the tags they choose?

Lenders watch, then, as their small investment ostensibly facilitates the success of someone they see as their entrepreneurial, neoliberal peer (the borrower). Tags, textual narratives, and images uploaded by other lenders and Kiva fellows support the lenders’ assumptions of their personal impact. Despite lenders’ genuine intent to help the borrowers, Kiva’s interface limits engagement with the subaltern’s lived experience – those “sticky materialities” – and diminishes any need for further involvement and relationship building. Again, although Kiva presents a façade of a level playing field, lenders and borrowers remain situated in their respective Global North and Global South contexts. Digital microfinance platforms such as Kiva, while seeming to offer hope and connection, still “endorse the credit-baiting of the poorest rural women of the Southern hemisphere in the name of micro-enterprise without any infrastructural involvement” (Spivak 2000, p. 7). Overall, Kiva seems to appease the lender/consumer’s desires rather than aiming to effect change.

The staging of subaltern crafter profiles therefore targets select forms of feminized lending in an act of marketing for empowerment. The acts of giving and the interactions with fellow lenders around the act of giving not only produce affective networks and community among these lenders, they also produce an imagined relationship with the subaltern borrower based on identification and potential collaboration. However, because there is no real opportunity for actual dialogue flowing from the subaltern to the digital giver, discursive hierarchies within the affective

networks of the digital givers still privilege the worldview of the lender. Ultimately, this practice is not sustainable in terms of temporal scalability within global economic development.

Conclusion

This chapter discussed how feminized sociality developed online as free labor that supports neoliberal economic infrastructures and global digital financialization. We recognize how online philanthropy in particular (as an example of these systems) depends on affective labor that has historically been undervalued as feminine and seen as outside the sphere of productive labor. **Part I** of this chapter outlines the current limits of Internet development and the lack of diversity in coding. We argue that startups and other online platforms depend already on diverse user/consumer labor and therefore, business that seeks temporal scalability requires more inclusive labor practices in their development side. **Part II** reviews the historical frameworks that situated women's labor as reproductive and outside of productive relationality to provide a foundation for the discussion we undertake in **Part III**, which ultimately seeks to demonstrate how online philanthropy operationalizes feminized sociality through affective networking. We articulate this process to better understand not only illustrate how global financial businesses rely on diverse user/consumer labor, but to detail also how this labor still works in support of neoliberal capitalism as it occurs within frameworks developed by a homogenous engineering labor force.

References

- Castells M (2011) The rise of the network society. Volume I, The information age: economy, society, and culture. Wiley, Hoboken
- Cheney-Lippold J (2011) A new algorithmic identity: soft biopolitics and the modulation of control. *Theory Cult Soc* 28(6):164–181. <https://doi.org/10.1177/0263276411424420>
- Flannery M (2007) Kiva and the birth of person-to-person microfinance. *Innovations*, 2(1-2):31–56
- Gajjala R (2017) Online philanthropy in the global north and south: connecting, microfinancing, and gaming for change. Rowman & Littlefield, Lanham
- Garrard A (2008) 5 questions for Jessica Flannery, co-founder/chief marketing officer, kiva. Retrieved from <http://philanthropynewsdigest.org/5-questions-for/jessica-flannery-kiva>
- Jarrett K (2015) Feminism, labour and digital media: the digital housewife. Routledge, New York
- Jenkins H, Ford S, Green J (2013) Spreadable media: creating value and meaning in a networked culture. New York University Press, New York
- Rheingold H (2000) The virtual community: homesteading on the electronic frontier. MIT Press, Cambridge, MA
- Spender D (1995) Nattering on the net: women, power, and cyberspace. Spinifex Press, North Melbourne

- Spivak GC (2000) From Haverstock Hill flat to U.S. classroom, what's left of theory? In: Butler J, Guillory J, Thomas K (eds) What's left of theory? New work on the politics of literary theory. Routledge, New York, pp 1–39
- Terranova T (2000) Free labor: producing culture for the digital economy. *Soc Text* 18(2):33–58. <https://muse.jhu.edu/>. Retrieved 1 Jan 2018
- Tsing A (2005) Friction: an ethnography of global connection. Princeton University Press, Princeton
- Ullman E (1996) Come, in, CQ: the body on the wire. *Educom Rev* 31(6):46. Retrieved 1 Jan 2018
- Vogel L (2013) Marxism and the oppression of women: toward a unitary theory. Brill Publishers, Leiden/Boston
- Wetherell M (2013) Affect and discourse – what's the problem? From affect as excess to affective/discursive practice. *Subjectivity* 6(4):349–368. <https://doi.org/10.1057/sub.2013.13>



Networks of Change: The Sociology of Network Media

14

Stig Hjarvard

Contents

What Is a Network?	242
What Is <i>Not</i> a Network?	244
What Are Network Media?	246
What Is a Network Society?	249
Individualism in a Connected World	252
Soft Individualism	254
The Spiral of Silence and Context Collapse	256
Network: An Intensified Form of Mediatization	259
References	260

Abstract

This chapter focuses on the social dimensions of the Internet and various forms of network media. It places particular emphasis on the *network* character of such media and how they may change existing forms of social structures in favor of networked forms of organization. The perspective is predominantly sociological, including perspectives from media sociology. The chapter examines existing theoretical arguments concerning the nature of the Internet and network media and their influence on society within the framework of mediatization theory (Hjarvard 2013). The dynamics of networks in social and cultural change are then demonstrated in an analysis of changing forms of individualism in

The chapter is a revised edition of a Danish-language chapter in the book *Medieteorologi* [English: Media Theory], edited by Palle Schantz Lauridsen and Erik Svendsen and published by Samfundslitteratur in Denmark in 2017.

S. Hjarvard (✉)

Department of Media, Cognition and Communication, University of Copenhagen,
Copenhagen S, Denmark
e-mail: stig@hum.ku.dk

contemporary culture. The chapter is organized as a response to five questions: What is a network? What is not a network? What are network media? What is a network society? What kind of individualism does a network foster?

Keywords

Bureaucracy · Individualism · Mediatization · Network · Social change

In his book *Being Digital*, Nicholas Negroponte, head of MIT Media Lab and co-founder of the magazine *Wired*, set an optimistic agenda for the emerging digital revolution:

The agent of change will be the Internet, both literally and as a model or metaphor. The Internet is interesting not only as a massive and pervasive global network but also as an example of something that has evolved with no apparent designer in charge, keeping its shape very much like a formation of a flock of ducks. Nobody is the boss, and all the pieces are so far scaling admirably. (Negroponte 1995: 181)

The Internet would not only become a global phenomenon and exert considerable influence on culture and society; it would also, through its own network organization, be emblematic of the demise of centralized forms of governance in a hierarchical society. The Internet has no boss but distributes power to everyone: “The Access, the mobility, and the ability to affect change are what will make the future so different from the present. The information superhighway may be mostly hype today, but it is an understatement about tomorrow. It will exist beyond people’s wildest predictions” (ibid., 231). According to Negroponte, new digital media are based on completely different principles than old mass media such as television. The two types of media are so “totally different from each other that their designers don’t even speak the same language. The rationale of the one is about as logical to the other as Islamic fundamentalism is to an Italian Catholic” (ibid., 180). Nicholas Negroponte’s book from 1995 became an international bestseller and acquired the status of a cyber-optimistic manifesto. It both contributed to and reflected the ideological mind-set that was voiced in the columns of *Wired* and circulated in Silicon Valley and similar digital entrepreneur cultures and that consisted of a surprising mix of the 1960s counterculture, technological utopianism, and capitalist entrepreneurship. As Fred Turner describes in his historical analysis of these utopian ideals regarding the revolutionary force of digital networks: “pundits, scholars, and investors alike saw the image of an ideal society: decentralized, egalitarian, harmonious, and free” (Turner 2006: 1).

If we are to assess Negroponte’s predictions today, over two decades later, the scope of societal change that he anticipated does not seem to have been exaggerated. The Internet and digitalization have had immense influence on almost every cultural and social phenomenon, including increasing the prevalence of network principles of organizations in many spheres of society. However, when considering the character and consequences of these changes, it is impossible to maintain the same unqualified optimism. The Internet and digital media have not only had a

democratizing influence and have not only empowered individuals with access to more information and increased participation. The Internet and digital media are not only tools in service of democracy; increased surveillance, Internet crime, and filter bubbles are just a few of the problems that have followed in the footsteps of digitalization. The Arab Spring and its so-called Facebook revolutions have sadly demonstrated the limits to these digital promises, as these revolutionary changes have paved the ways for new forms of totalitarianism and conflict. When network media become integral to culture and society, they also become interwoven with existing power structures. Cyber-optimists have, therefore, been criticized for a technological determinism that underestimates the manner in which political, commercial, and military interests have actively formed the development of the Internet. Phenomena such as surveillance are not just unanticipated side effects of this development but result from dominant actors' conscious exploitation of the Internet to pursue their own strategic interests, for instance, commercial and security interests (see, e.g., Curran et al. 2012). In reaction to this, Morozov (2011) has called for a *cyber-real* manifesto. The idea is not to give up on ideals about, for instance, how new technologies should serve democracy but to instead relinquish belief in easy technological fixes for societal problems: We should be conscious of the political, cultural, and societal power structures of which the Internet and other digital media form a part.

In this chapter, a predominantly media sociology approach is adopted to examine the integration of network media into culture and society in general and the role of media in the spread of network organizing principles in particular. In light of the aforementioned critique of cyber-optimism, my position will be cyber-realistic rather than cyber-optimistic or cyber-pessimistic. The implications of network media must be understood through the actual interplay between technologies, societal actors, and institutional frameworks, not on the basis of any promise of progress or catastrophe inherent in these communication technologies themselves. My approach to media sociology is inspired by mediatization theory (Hjarvard 2013, 2017; Lundby 2014), which focuses on how media may play an active part in social and cultural change and may subsequently set conditions for the ways in which people interact with and develop relationships to one another. Following this perspective, a media sociological approach is concerned not only with looking at media in social context but also with understanding the role media play in social and cultural *change*. Manuel Castells (1996: 469) states that the networking form of organization changes “production, experience, power, and culture,” and it is precisely such changes that are the focus of this chapter. We are interested not only in the properties and characteristics of network media but also in how network media both contribute to and themselves become influenced by culture and society. The first part of the chapter specifies the key concepts of network, network media, and network society, and the second part provides a critical discussion of various contributions to our understanding of the influence of network media on societal phenomena such as individualization and opinion formation. In the conclusion, it will be clarified how we may understand the influence of network media as an intensified mediatization of culture and society.

What Is a Network?

Networks are not a new invention but have existed throughout human history, ever since the earliest societies of hunters and gatherers, for instance, as kinship networks or networks of hunters. Neither are networks specific to the human world: They are also found in nature, for instance, as neuronal networks in the brain and food networks in the sea. Jan van Dijck (2012: 28; emphasis in original) defines the basic form of a network as “*a collection of links between elements of a unit.*” Following this minimal definition, a network consists of at least three elements, also called nodes, and two connections that create the relationship between the three nodes. A simple network is, for example, person A being friends with person B, who is friends with person C. Most networks comprise of many more nodes and connections, whereby the individual nodes may have numerous direct and indirect connections to other nodes in the network. On Facebook, for instance, your own network of “friends” may partly overlap with other networks, and each node, in this case a “friend,” will have connections to many other “friends,” both within and outside your own network of “friends.”

Dijk (2012) furthermore argues that we must distinguish between different *social levels* on which networks operate. In the case of *individual networks*, the nodes consist of individual people. This is, for instance, the case with Facebook’s individual personal profiles. However, not all profiles on Facebook are individual, and some consist of larger entities. At the level of *groups and organizational networks*, the nodes are collective entities that identify with each other through shared interests or work relations. For instance, a company will typically try to build networks to ensure good relationships to stakeholders among customers, suppliers, local authorities, etc. At the general *societal level*, we also find network forms of organization, typically tied to the political and economic management of national affairs. In the area of education, we find networks of both formal and informal character between the ministry of education, educational institutions (e.g., schools and universities), interest organizations (e.g., trade unions and industries), think tanks, political parties, and media. Finally, following the process of globalization, we increasingly find *global networks* in which states, multinational companies, and geographical hubs (e.g., with particular technological know-how, natural resources, or infrastructure) interact with and are dependent upon each other. Networks at each of these levels have their own dynamics, but the levels are also interwoven. On a social network media as Facebook, we find a coupling of individual and organizational networks in the case of political parties seeking to connect individuals to their organizations’ profiles. Similarly, networks at the group and organizational level may try to increase their influence by connecting to societal and global networks and vice versa.

Network theory is thus a very general type of organization theory that may be applied to very different levels of analysis, from microanalyses of individual networks to macroanalyses of national and global networks. It is furthermore not restricted to any particular area or field of research but may be used for analysis of media networks, political networks, and professional networks. A distinctive feature of network theory, irrespective of the level or field of application, is its emphasis on

connections and relationships. In contrast to types of organizational theory that take the organizational unit as their point of departure, network theory focuses on the *relationships* between nodes in the network. The individual elements or nodes acquire their meaning and importance by virtue of their relations to other nodes in the network, and it is through the *exchanges* between them (e.g., communication and trade) that the structure of the network is created and reproduced. This emphasis on the role of relationships reveals network theory's intellectual inspiration from the humanities, particularly semiology and structuralism. A principal argument of semiology, the theory of the meaning of signs, is that an individual sign has no meaning in and of itself but comes to signify something through its relationships to other signs (Greimas 1966). Linguistic expressions acquire meaning through their relationships to other expressions, and the structure of the language and associated meanings are products of this relational system of difference and similarity.

Network theory has also been inspired by structuralism, which developed into a general theory of social and cultural organization (Lévy-Strauss 1969) by expanding key arguments of semiology beyond the realm of language and signs. The main ambition of structuralism has been to elucidate how all cultural and societal phenomena exhibit *relational and systemic* characteristics. Both cultural and social domains can be described as systems with specific inner structures in which individual elements are assigned particular positions vis-à-vis other elements. These positions condition the ways in which particular elements interact with other elements: For instance, kinship as a social structure may condition decisions about marriage, heritage, authority, etc. The structure is therefore more than the sum of the individual elements and relationships; the structure constitutes an overriding system that works back upon the individual elements. Network theory similarly emphasizes the prerogative of the network vis-à-vis its individual parts: It is because of the overall structure of the network and the various actors' different positions within it that individual actors acquire their particular functions and scopes of action.

Structuralism has been criticized for creating too static an interpretation of cultural and social phenomena. The strength of the structuralist approach is its ability to show how internal structures of a social or cultural system (e.g., divisions of labor or cultural distinctions) may influence both the action of individuals and the overall performance of the system in question. But it is less helpful for analyzing social and cultural change, i.e., how systems and structures transform over time, including how they change under the influence of various actors. In order to create a more dynamic understanding of how social systems develop and change over time, *structuration theory* underscores the interplay between structure and agency (Giddens 1984; Stones 2005). According to this theoretical perspective, structure is not given once and for all but is continuously reproduced and possibly changed through the interaction and communication between human actors. Structure and agency therefore *mutually presuppose one another*. The structure is a resource that enables and limits individual agency at the same time as the agency of individuals reproduces and potentially changes structures over time. To illustrate this, we can consider an example of social interaction on Facebook: When we invite new friends or create a new event on Facebook, we make use of Facebook's structure as a resource that

conditions how we engage with others. Even though our individual acts may not change Facebook's digital architecture (e.g., algorithms), our actions will at the micro social level change our own status and position in the network as well as the size of the network in terms of traffic to and from our profile or event. Jan van Dijk's (2012) network theory is based upon structuration theory, and we must accordingly understand networks as dynamic structures that not only limit but also enable actors' agency, including agency with the potential to change aspects of the network structure.

What Is Not a Network?

A second distinctive feature of network theory is furthermore that networks are conceived as a type of organization that differs and is perhaps even antagonistic to another widespread type of organization: *bureaucracies*. Although the network, as a type of organization, is found throughout history, it is often considered a newer or more modern type of organization compared to the bureaucratic type. In other words, the bureaucratic type of organization is perceived as the dominant organizational form of industrial society and the modern state, whereas the network is the preferred organizational form of the global information society. The German sociologist Max Weber (1947) offered the paramount analysis of modern bureaucracy. For Weber, "bureaucracy" was an analytical term and was not associated, as it is today, with various normative connotations, such as excessive administration or alienating organizational systems. From this analytical perspective, modern bureaucracy was a rational alternative to the arbitrariness and nepotism of administration in the feudal world and was a rational response to the growing burden of administration in the expanding modern state as well as the increased demand for work planning and administration in large industries.

Weber (1947) identified three characteristics of the development of the bureaucratic form of organization: *rationalization*, *differentiation*, and *integration* (Monge and Contractor 2003: 16ff). Bureaucracy entails a rationalization of work through an objective description of the processes involved in order to prescribe the working of the organization in every detail. Bureaucratic forms of organization therefore emphasize optimization and standardization in order to plan and control work on an industrial scale, as, for instance, Ritzer (1993) has demonstrated in his study of the McDonald's fast-food chain. Differentiation significantly involves a division of labor in which a worker may repeatedly carry out the same specialized task. Finally, integration involves the systematic organization of bureaucracy in a unified, coherent chain of command in which each level's competence is defined by and refers to the level above. In the industry, these organizational features are also reflected in "Fordism," i.e., the assembly-line production method named after Henry Ford and his famous automobile factory, which pioneered this form of production from the beginning of the twentieth century.

Networks are clearly distinguishable from this bureaucratic form of organization (see Table 1 for a comparison). Firstly, an important difference concerns the

Table 1 Ideal typical characteristics and differences between bureaucratic and network types of organization

Bureaucratic organization	Network organization
Organization is clearly demarcated from the outside world. The organization constitutes a well-defined entity	Diffuse distinction between the organization and the outside world. The organization consists of relationships
All actors have a well-defined role and function in relation to the tasks of the organization	Participants may have a central or peripheral role, depending on the tasks in question
Formal and centralized organization, with hierarchical delegation of authority downwards	Informal and decentralized organization, with varying degrees of autonomy in different parts of the network
Organization can act as a collective and on behalf of all members of the organization	Everybody may act on their own behalf but not on behalf of the whole network
Typically tied to a specific location or territory, e.g., the nation	Typically spread across several locations or a larger territory, in some cases a global reach

organization's demarcation from the outside world. Bureaucracies have clear borders between inside and outside, as they are embodied by the counter at which outsiders must report their errands for and requests to the bureaucracy. A network is typically not clearly demarcated from the external world; some parts of the network appear only loosely and temporarily connected to the network, while other parts are more stable and centrally located. Autonomy and authority to act are typically distributed to many parts of a network; in contrast, a bureaucracy has a formal and hierarchical delegation of authority, with a high concentration of authority at the top of the pyramid. By the same token, network members may speak on their own behalf but will not usually be able to speak on behalf of the entire network. In a bureaucracy, the upper management can speak for the whole organization, and everyone must speak with the same tongue.

Finally, a bureaucratic organization is typically tied to a specific locality or geographical space, often the national territory. Networks, in contrast, couple different localities or spaces, at times at a global level. In summary, the two types of organization have different strengths and weaknesses: The formal hierarchy of the bureaucracy creates an unambiguous chain of command and a clear and functional division of labor within the organization. The distribution of authority and autonomy in a network provides it with greater flexibility to act, and the porous border between inside and outside the organization facilitates greater contact with the external world.

The juxtaposition of features of the bureaucracy and the network in Table 1 highlights some ideal typical differences, but in the real world, we find examples of the two organizational types in which not all of the characteristics apply. Furthermore, we may find various combinations of bureaucratic and network types of organization. A user-generated knowledge platform such as Wikipedia is based on a network principle, which in theory allows everybody to participate and collaborate on building a common knowledge resource. At the same time, however, Wikipedia has an inner and more formal organization and delegation of authority concerning editorial responsibilities and privileges to ensure that the encyclopedia's stipulated

principles are respected (cf. Dijck 2013: 145). A sharp distinction between the two organizational types is also made difficult by newer institutional and organizational theory's argument that even traditional bureaucratic organizations are coming to rely on informal and looser network-like organizational forms. The cultural "turn" in institutional theory (March and Olsen 1989) has made us aware of the complex interplay in organizations between, on the one hand, formal and functional features and, on the other hand, informal and cultural features. Finally, it is worth noting that we, normatively speaking, should not consider one of the two organizational forms better than the other. As Jan van Dijk emphasizes, "networks are not necessarily more 'flat', democratic, open, free, accessible, physically unconditional or less socially coherent than other modes of organization and communication" (Dijk 2012: 47).

What Are Network Media?

Even though other and older media such as the handwritten letter may support social networks, it was the advent of the Internet that created a digital infrastructure to support network-based communication and interaction in a decisive new way. In particular, the so-called Web 2.0, making possible dynamic homepages and user-generated content, made the Internet a genuine network medium. Three characteristics are important here. Firstly, the Internet allows for *flexibility* with regard to the number of participants. Earlier media were either mass media (one-to-many, such as film and TV) or interpersonal media (one-to-one, such as the telephone and the letter). The Internet enables communication that is flexible relative to the size and needs of a network, including one-to-several, several-to-several, etc. Secondly, the Internet affords *interactivity*, in principle allowing everybody to interact with everybody. Thirdly, the World Wide Web architecture enables *hyperlinks*, through which one webpage may be directly linked to related content on another page. The WWW network architecture diverges fundamentally from the linear narrative structure of most mass media, such as the book, film, radio, and television. The various media that have taken the Internet as their technological platform will therefore to greater or lesser extents be capable of supporting networked forms of communication and interaction. With portable computers such as laptops, tablets, and smartphones, *mobility* has been added to the characteristics of the Internet, making it ubiquitous and accessible, irrespective of time and place.

We distinguished above between two general types of organization, network and bureaucracy. In parallel, we may distinguish between two types of media, network media and mass media. Klinger and Svensson (2015) identify characteristics of these media types at three different levels. Their typology focuses on political communication and journalism in relation to various forms of media logic, but in the present context, we will modify their typology to make it more generally applicable (see also Table 2). At the level of *production*, mass media are typically characterized by expensive content production, based on professional standards (e.g., television drama or journalism). In contrast, network media are often based on relatively

Table 2 Differences between the production, distribution, and uses of mass media and network media. Modified after Klinger and Svensson (2015: 1246)

	Mass media	Network media
<i>Production</i>	Expensive production of content on the basis of professional standards, e.g., news values and genre conventions	Inexpensive production of content by laypeople on the basis of individual preferences and amateur skills
<i>Distribution</i>	Professional gatekeepers select and package content that is centrally distributed to a paying mass audience	Users search for and redistribute content in a system sustained by algorithms, which create connections on the basis of common interests
<i>Media usage</i>	A mass audience has a predominantly passive consumption of media content on the basis of restricted supply	Individuals and interest-based network groups contribute to selective exposure and the updating of an unlimited supply of content

inexpensive production, in which amateurs contribute text, video, and audio. At the level of *distribution*, mass media are, again, based on expensive and professionalized services with centralized selection and packaging of content sold to audiences. In network media, distribution is to some extent in the hands of the users, who may both search for and redistribute content. User activity is not autonomous but is underpinned by algorithms in search engines and the network medium in question, which ensure that users are exposed to content on the basis of what their user profiles and past behavior may indicate they prefer. Finally, in the case of mass media, the *media usage* is at least in principle delimited by the media providers. In actual practice, it may be rather vast, as is today often the case with the supply of television and radio channels. With regard to network media, the network may circumscribe that to which the user has access, but within this realm, access to content is unlimited.

It is again important to emphasize that these are distinctions between ideal types. In the real world, we may find different and partly overlapping variants of the “pure” mass medium and the “pure” network medium. Digitalization and, more generally, media convergence cause media to incorporate characteristics from each other, making them resemble mass media in some aspects and network media in other aspects. Computer games, for instance, exhibit characteristics of both mass and network media. They are often expensive and professionally produced games that are marketed to a paying audience at the same time as they incorporate network features: Interaction with other players may to a greater or lesser degree be decisive for the entertainment and progression of the game (Smith 2007), and a player builds his or her profile and reputation through play in a network of other players.

The emergence of global network services such as Facebook, Instagram, LinkedIn, Snapchat, Twitter, and YouTube has further accentuated the network dimension of digital media. These services are typically discussed under the common label of “social media,” or simply SoMe, but this label is clearly misleading. “Social media” are neither more nor less social compared to other media. News media and television, for instance, perform vital social functions at both the societal level (e.g., supporting a public sphere) and the level of smaller groups in civil society

(e.g., structuring daily life in the household). Addressing this issue, Papacharissi (2015: 1) points to the varying social dimensions of individual media: “Each medium is social in its own unique way and invites particular social behaviors, its own form of sociality.” “Social” media’s own form of sociality arises in part from their network properties, which is why we will label them social network media (see also Klastrup 2016). A widespread definition of social network media highlights how the distinctive features of these media concern the relationships between the profile owner and other users, rather than the content, genre, or communicative purposes. Ellison and Boyd’s (2013) definition of a social network site specifies the following three characteristics:

a networked communication platform in which the participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-level data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user-generated content provided by their connections on the site. (Ellison and Boyd 2013: 158; emphasis in original)

Klastrup (2016: 37) has pointed out that many of the different services that are popularly labeled “social media” do not fully comply with this definition. Services such as Facebook, Twitter, and LinkedIn are clearly covered by the definition, but services such as YouTube and Snapchat do not fully comply with it. For instance, YouTube and Snapchat do not give the user access to a list of “friends.” In all cases, the definition points to a crucial development: Network relations are a distinctive, common feature of these media. It is up to users to create and decide for themselves with regard to the content and social functions of the mediated communication (e.g., entertainment, marketing, or political debate).

Because relationships between users are at the heart of social network media, these relations are also the driver of content distribution. For social network media businesses, it becomes commercially decisive to possess a technological infrastructure that optimizes traffic between nodes in the network. José van Dijck (2013) has studied the historical development of social network media and demonstrates how SoMe companies have gradually developed a set of steering logics that knit together their own strategic, commercial interests with the social interests of users. Social network media are not just passive intermediaries of pre-existing human interests and means of interaction. They actively construct new forms of social interaction, in which strategic purposes are interwoven with pre-existing social norms:

Contacting a friend you have not seen since high school may be a thoroughly human act, but if performed online a People You May Know algorithm typically prompts this deed [...] Technological pressure from multiple platforms to select the most popular and most connected person or idea, is, in turn, reinforced by peer pressure in real life. Peer pressure has become a hybrid social and technological force; connections between people inform automated connections and vice versa. (Dijck 2013: 157)

In light of this, Dijck and Poell (2013) identify four different but interconnected logics of social network media: programmability, popularity, connectivity, and

datafication. *Programmability* concerns a SoMe company's ability to prompt the user to act in specific ways through design and algorithms, at the same time as the user's own practical knowledge of these mechanisms may allow the user to use social network media to pursue his or her own objectives, such as self-promotion or promotion of products and ideas. *Popularity* entails that both users and contents are measured and ranked in terms of their general attractiveness, giving popular content and users with a large and active network more prominent positions in the network, for instance, made visible in a “most read” list. In addition to the ordinary social impulse to seek the company of others (“connectedness”), *connectivity* points to the strategic interest of social network media to connect users and content. It is also an instrumental logic in which connectivity becomes an end in itself. Finally, *datafication* concerns the fact that the very usage of social network media generates consumer intelligence, i.e., detailed information about user behavior and preferences, and that this information resource permits the creation of intelligent connections to maximize traffic in general and optimize the number of relevant connections in the network, especially between paid content and consumers’ interests. Dijck and Poell (2013) argue that these four logics apply to more than just social network media. In line with the general media convergence, they are also becoming influential within the operations of mass media, for instance, when social network media become an important distribution platform for journalistic news media (Newman et al. 2017). In this context, social network media logics may, for instance, come to influence journalistic news criteria by making popularity on social network media (e.g., likes and shares of articles) important for editorial priorities in the newsroom. News journalists may accordingly begin to select and narrate news in particular ways to make them travel better on Facebook or Twitter (Sacco and Bossio 2017).

What Is a Network Society?

Manuel Castells’ three-volume book on the information age was published in the second half of the 1990s and was instrumental in putting the idea of a “network society” on the agenda of both social research and public discussions more generally. According to Castells, the network is becoming the central organization principle in society and becoming responsible for changes in almost every societal domain:

Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture. While the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure. (Castells 1996, vol. 1: 469)

Since the 1970s, the “information society” and the “postindustrial society” had been widely used terms for a new societal condition, replacing the “industrial society” that had dominated the Western world since the Industrial Revolution in

the latter part of the eighteenth century. With the work of Castells, the network acquired greater conceptual and empirical prominence, and as new technologies, media, and services (Web 2.0, Facebook, etc.) have spread, supporting various communicative network formations, the concept has become ever more prominent in media and communication research.

Castells' (1996–1998) theory of the network society is based on a critique of earlier ideas about an information society and postindustrial society. Daniel Bell (1973) and Alain Touraine (1974) argued that the industrial society of the Western world during the second half of the twentieth century was replaced by a post-industrial society, just as the earlier agricultural society had been replaced by an industrial society in an earlier age. Industrial work and the production of material goods would gradually become less important for society, and the service sector and knowledge-intensive information work would come to play a more prominent role in the economy, also due to technological innovations such as information technology. Castells' own societal diagnosis in some respects resembles Bell's and Touraine's argument, but he is skeptical about the notions of "information society" and "post-industrial" society. Castells points out that information has always been an important resource for human societies and that information as a source of affluence cannot, therefore, be the distinguishing feature. Similarly, the distinction between the industrial and the postindustrial cannot explain the crucial differences between the present and former societies. In the present network society, we find many forms of work that are not information intensive, for instance, in the service sector, at the same time as the agricultural and service sectors are in some instances highly industrialized. Instead, Castells posits, we must distinguish between two different forms of knowledge-based production, a distinction that cuts across the different agricultural, industrial, and service sectors or primary, secondary, and tertiary forms of production.

Castells characterizes the new form of knowledge-based production as "informationalism" (instead of information society). This term is meant to specify how societies "organize their production system around the principles of maximizing knowledge-based productivity through the development and diffusion of information technologies, and by fulfilling the prerequisites for their utilization" (Castells 1996, vol. 1: 204). In the last sentence, Castells calls attention to the fact that information and technology are insufficient factors in themselves. With informationalism, the whole society and culture become organized to support the continuous optimization of the productive power of information technology. Here, Castells builds upon an important argument by Alain Touraine, who pointed out how growth has become ever more dependent on other parts of society and not just the industrial sector: Growth "depends much more directly than ever before on knowledge, and hence on the capacity of society to call forth creativity. All the domains of social life – education, consumption, information, etc. – are being more and more integrated into what used to be called production factors" (Touraine 1974: 5). Accordingly, the social structure and cultural values become influenced by demands for information-based knowledge production. An example of this is the active role of Nordic welfare states in advancing the digital infrastructure of society: By making it

mandatory for all citizens to communicate through digital services on all matters concerning public institutions, the state is equipping the entire population with digital competencies. More broadly speaking, the development of the “competition state” (Pedersen 2013) is transforming the function of the welfare state in order to secure welfare and support industrial growth in a global competition between states based on high-tech innovation. Information technology is, Castells argues, not only a valuable resource (like oil) or a productive power (like a machine) for the production of goods and values; because of its integration into culture and society, it becomes pivotal for the continuous creation of new and valuable knowledge.

Informationalism and its coalescence of information technology, culture, and society are reflected in globalized and networked forms of interaction. Economic activity is developing through an increased global division of labor supported by industrial, political, and social networks. Neither international division of labor nor networks of interaction are new phenomena, but the rise of informationalism has made them decisive for continuous growth or the lack hereof. Their location at the center or periphery of the global networks of companies, cities, organizations, etc. becomes critical for the success or failure or growth or decline of not just industries but whole nations.

The Internet has played a pivotal role in the development of such global networks, and the penetration of the Internet has become an important index of a country’s level of development, which may also be used in the international competition to attract investment and labor. As a result, new forms of power arise related to one’s position in and control over the network. Castells (2011) speaks, for instance, of “networking power,” which consists of the power of centrally located actors to control the reach and structure of the network, i.e., a kind of gatekeeping power influencing who is inside and outside the network. A very visible example of this is the Chinese Communist Party’s attempt to delineate the Chinese Internet from the outside world through the “Great Firewall of China,” making online traffic between China and the outside world difficult at the same time as encouraging the development of Chinese services (e.g., WeChat, Alibaba, and Baidu) as alternatives to similar Western services and thereby ensuring that online traffic will develop around Chinese industries. Another form of power is “network-making power,” which is exercised by actors who program specific network services in accordance with their own interests and values. The Google’s repertoire of online services, e.g., Google’s search engine, advertising service (Google AdWords), and analytical tools (Google Analytics), is a good example of this form of power. Through its “programming,” both in a strict sense (development of software tools) and in a metaphorical sense (development of a technological and commercial infrastructure), Google has been able to transform the global advertising market to its own advantage.

The collapse of the Soviet Union by the end of the 1980s must also be seen in light of the development of the network society, Castells (1996–1998) argues. The state-driven command economy was unable to take advantage of the revolution in information technology. The hierarchical organization of work and industrial development (5-year plans) and the failing ability and will to allow network organization in civil society to support the revolution in information technology became

important obstacles for the Soviet economy. Castells (1996–1998), therefore, also sees the global network society as a triumph of capitalism, which has become the dominant – if not universal – economic model, bearing in mind its victory in China. The network society is, however, not just permeated by the profit incentive of capitalism. The growth of social networks and the spread of information technologies have also supported social and cultural emancipation through which, for instance, environmental movements and women’s rights movements have been able to challenge traditional hierarchies and power centers in favor of a more egalitarian and open organization of social, cultural, and political affairs.

Individualism in a Connected World

Several researchers have suggested that the spread of network media has underpinned an increased individualization and a change in the very conception of the self and its relationship to the external world. With his concept of “mass self-communication,” Castells (2009) points to the many new possibilities the individual has acquired through digital media. An example of this is the service of YouTube, which allows individuals to reach a mass audience. This service may also be subject to individual control in other ways: A YouTube video may be recorded and edited by a private individual, just as the viewing of the video is partly dependent on the individual viewers’ own search for the video. Social network media in particular feature individual self-representation as an important communicative component, and the online world in general has provided new ways for individuals to play with their identities (Baym 2015). Increased individualization goes hand in hand with the blending of public and private forms of communication. It works both ways: Public personae such as politicians may communicate in a more informal language and elicit more personal information about themselves, for instance, on Facebook, while private individuals have much easier access through network media to participate in semipublic or public fora.

Rainie and Wellman (2014) posit the arrival of a “new social operating system,” which they label “networked individualism.” This new form of individualism is a result of interplay between three different revolutions in how the individual interacts with his or her surroundings. Firstly, a *social network revolution* has made it possible for the individual to have more and more diverse types of relationships with people outside the circuit of close acquaintances that formerly dominated the life of an individual: family, workplace, and local community. This network revolution is not only a product of new media but also supported by a general development in society, for instance, urbanization. Secondly, the *Internet revolution* has extended the individual’s ability to obtain information and communicate at a historically unprecedented level. The individual is now less dependent on close social ties or collective organizations, for instance, family and library, to acquire information and communicate with his or her surroundings. Thirdly, the *mobile revolution* has made information technology an adjunct of the body, allowing the individual to access his or her extended network everywhere and anytime. The network has thus acquired a

continuous presence in the individual's life, accessible not just at particular locations or in particular situations but now subject to the individual's constant attention: The self is always "on," always connected (Rainie and Wellman 2014: 11ff).

The social operating system resulting from these interrelated processes places the individual unequivocally at the center of the network: "In the world of networked individuals, it is the person who is the focus: not the family, not the work unit, not the neighborhood, and not the social group" (Rainie and Wellman 2014: 6). Although they also mention that the extended network entails new obligations and possibilities for stress, Rainie and Wellman's argument is generally an optimistic message about how new possibilities allow the individual to free himself or herself from the close ties of the past and, therefore, that the most important issue is access to networks, since a networked world "provides opportunities for people to thrive if they know how to maneuver in it. Arguably, the emerging divide in this world is not the 'digital divide' but the 'network divide'" (Rainie and Wellman 2014: 255). Rainie and Wellman are most likely correct when they posit individualization as an important outcome of these developments, but they do not have much of an eye for how economic and social circumstances may influence the ways in which these changes are experienced. For Rainie and Wellman, digital developments first and foremost open up new possibilities, but for some people, the increased demands for individual entrepreneurship with regard to self-performance and networking skills may be experienced as a burden at the same time as the positive qualities of a life based on closer social relationships become less prevalent. Rainie and Wellman (2014) take little interest in the various forms of power exercised in and through networks and how they may influence who is in and who is out of the network, as, for instance, identified by Castells (2011). The aforementioned four logics of social network media (Dijck and Poell 2013) also indicate that what may superficially be identified as purely individual preferences and actions online may often be informed by algorithmic structures that prompt the individual's choice in the direction of the most popular or most commercially valuable connections. We may to some extent regard Rainie and Wellman's positive assessment as a reflection of the priorities and interests of a well-educated and mobile middle class: For this segment of the population, disruption of the local community and dwindling permanent employment may not represent paramount threats.

Increased individualization and extended contact with one's surroundings have also been subject to critique. Sherry Turkle (1984, 1997) was among the first to voice concern that first the computer and later the Internet had changed humans' self-perceptions and relations to others. According to Turkle, digital systems not only create contacts with other people but themselves exhibit social intelligence, and this, in turn, may change the human understanding of identity and the experience of social contact. This is reflected in both children's and adults' ability to relate socially and emotionally to intelligent robots, but relationships between humans may change as well. Turkle has successively become more skeptical toward the social relationships afforded by digital connections: "We are lonely but fearful of intimacy. Digital connections and the sociable robot may offer the illusion of companionship without the demands of friendship. Our networked life allows us to hide from each other,

even as we are tethered to each other. We'd rather text than talk" (Turkle 2011: 1). Rainie and Wellman (2014) interpret the weakening of close ties to the local community as liberation, whereas Turkle (2011) sees it as a loss because the new ties have no lasting value: "The ties we form through the Internet are not, in the end, the ties that bind. But they are the ties that preoccupy" (Turkle 2011: 280).

Rainie and Wellman (2014) and Turkle (2011) to some extent agree on the diagnosis, but they disagree on the consequences of more and weaker relationships. In sociology, strong ties are usually characterized by a high degree of mutual obligation (for instance, between parents and children), while weak ties entail fewer mutual commitments (for instance, between neighbors), and this may lead to the assumption that strong ties are more important and perhaps also better from a normative viewpoint. Granovetter (1973) turned this distinction on its head when he used it to examine information flows. If we focus on how much new information is circulated within a network of people rather than on the strength of mutual obligations, we will find that weak ties are stronger. Within a smaller, tight-knit group of people, there will be a tendency to circulate the same, already familiar information and viewpoints. In an extended network of people who are connected only by weak ties, there will be a greater likelihood of receiving new information and other viewpoints than those with which one is already familiar. Granovetter (1973) demonstrates how people looking for a new job were exposed to more new information through networks of weak ties than were people relying on strong ties to seek information about new job possibilities. When Rainie and Wellman (2014) have a positive interpretation of developments, it is precisely because the emerging type of networked individualism allows one to be exposed to new ideas at the same time as one can market one's own ideas and products to a much larger network. When Turkle (2011) criticizes the many new weak ties, it is because she is not interested in the flow of information but is instead focused on the social and psychological quality of relationships, where strong ties almost by definition last longer and have greater emotional depth.

Soft Individualism

The growing importance of weak social ties should be seen in the context of what I elsewhere (Hjarvard 2013: 137) have labelled a new kind of *soft individualism*, in which the individual strives for recognition through an extended network of online and offline relationships. Typically, we will consider individualism to be an emancipation from collective order, i.e., society's control over the individual at various levels, for instance, the patriarchal family, the tight-knit social group, or the state. However, the kind of individualism that is exercised in digital media is typically another kind of individualism, a soft individualism, which is strongly oriented toward and dependent upon the social surroundings. The American sociologist David Riesman (1969) was among the first to identify a change in the social character of the modern and urbanized individual. The dominant classes of early

modern society were characterized by an *inner-directed* character, while late modern society is characterized by the dominance of an *other-directed* character. This distinction is also relevant for understanding the influences of network media. The inner-directed character was steered by a strong superego that ensured the maintenance of norms and values internalized at an early stage in life. This strong but less flexible subjectivity becomes less and less functional in a phase of high modernity. In a changing social environment of big cities, big companies, and a society just as much oriented toward consumption as production, there is a need for individuals who are flexible and able to cooperate with other people and capable of adapting to the changing norms and manners of their surroundings. Riesman summarized the difference between the two characters with two metaphors: The inner-directed character navigated the social world by the use of an inner gyroscope, while the other-directed character steers with the help of a radar that constantly scans for information about changes in the environment.

The shift from an inner- to an other-directed character is associated with a change in the mechanism that ensures social cohesion and observance of social norms. The inner-directed character is regulated by the feeling of *guilt*: He maintains his position in the social order by feeling guilt when transgressing the norms he was raised to follow. The other-directed character is, in contrast, regulated through *recognition* from the surroundings. Through a continuous interaction with and feedback from the external world, the individual ensures that he complies with the current demands and norms of society. The demand for recognition entails that the other-directed individual does not seek autonomy through a decoupling from the collective. On the contrary, autonomy is dependent on continuous interaction with other people:

The presence of the guiding and approving others is a vital element in his whole system of conformity and self-justification. Depriving him of the sociability his character has come to crave will not make him autonomous, but only anomie – resembling in this the cruelty of depriving the addict of liquor or drugs by a sudden incarceration. Moreover, if the other-directed man is seeking autonomy, he cannot achieve it alone. He needs friends. (Riesman 1969: 277)

For Riesman, it is not only the extended groups of friends that constitute a point of reference; mass media also play an important role in the continuous radar scanning of surroundings for information about whether or not the individual is in accordance with current social norms. The spread of new media, including various forms of network media, has dramatically increased the individual's ability to scan the surroundings and keep in contact with other people, at the same time as the interactivity of such media allow for continuous and reciprocal feedback, including recognition or misrecognition, of participants' performances. Social network media seem particularly well suited for the kind of social interaction, *sociability*, in which, according to Riesman (1969), the other-directed character thrives: Here, the participants' own performances take center stage in a social struggle to obtain recognition through likes and sharing of messages. Network media may thus support the development of a particular form of soft individualism

that is not juxtaposed with collective norms but is instead nourished through an extended network of many weak ties.

The Spiral of Silence and Context Collapse

The important role of social recognition between participants in social network media has repercussions for the ways in which discussions and opinion formation may occur within these media. Studies from several countries demonstrate that social network media such as Facebook do not make people interested in discussing controversial issues. The Pew Research Center (2014) reports a US study showing that people are generally much less willing to discuss controversial issues on Facebook and Twitter than in offline settings such as the dinner table at home, at a restaurant with the friends, or at a public meeting. The study also finds that social network media are not an alternative venue for people who do not want to discuss a controversial issue face-to-face with other people. The Danish Agency of Culture (2015) conducted a similar survey, and the results showed that only 6% of people were very willing to use social network media to discuss controversial issues such as Denmark's participation in international military campaigns. Twelve percent were willing to voice their opinion on this issue at a public meeting, while 45% were willing to discuss it with a good friend at home (see Fig. 1). Fladmoe and Sten-Johnsen (2017) reached similar results in a Norwegian context. Social network media frequently may contain fierce debates about controversial issues, but this may, in view of these findings, be a result of a limited number of people engaging in such issues, while the overwhelming majority refrain from actively taking part in such discussions. The findings also suggest that we should be careful not to consider debates on social network media as representative of the viewpoints or interests of the general population.

The perhaps surprisingly low willingness to discuss controversial issues on social network media may be partly explained by the social psychological mechanism called *the spiral of silence*. Noelle-Neumann (1993) based her theory of this mechanism on the general observation that individuals' participation in discussions is influenced by a fear of social isolation, and she demonstrated how willingness to openly assert one's opinion on a topic is dependent upon the extent to which one's own opinions are perceived to accord with the viewpoints of a majority or minority of the population. In other words, in order to prevent loss of recognition in a network, a person is likely to abstain from voicing his or her opinion if he or she thinks that many other people in the network do not share that opinion. The important factor is not whether the "friends" in the network actually agree or disagree regarding the topic in question but whether the individual *perceives* them as disagreeing. Figure 2 demonstrates that willingness to discuss controversial issues on social network media is dependent upon the perceived degree of agreement or disagreement between the individual and his or her friends in the network. The spiral of silence has, as its name indicates, a cumulative effect: When one person refrains

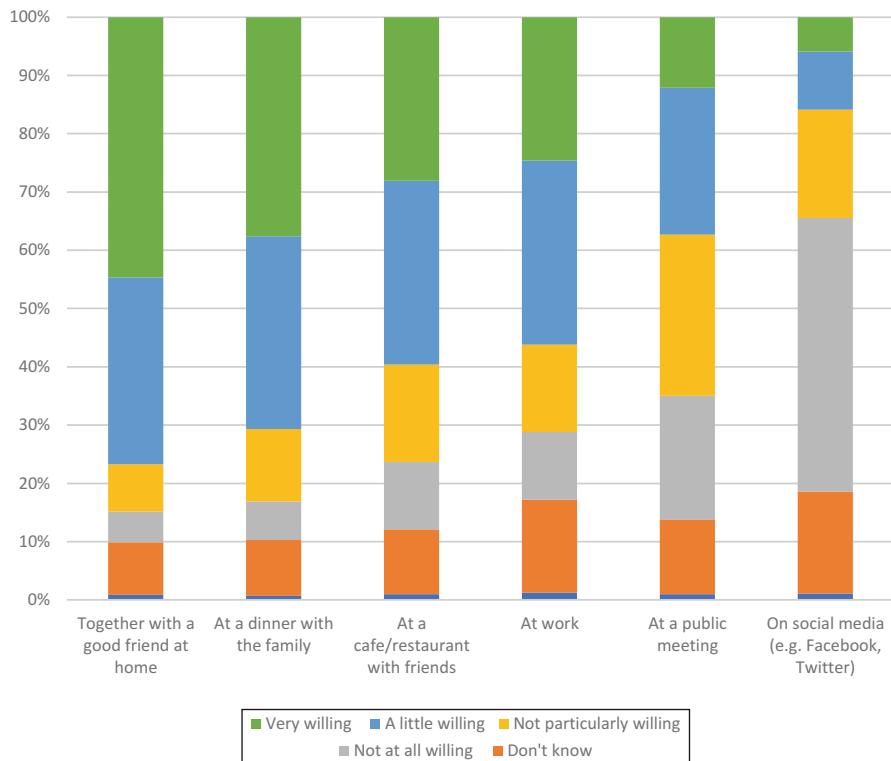


Fig. 1 Degree of willingness to discuss controversial issues on social network media compared to in various offline situations. Source: Index Danmark/TNS Gallup and Danish Agency of Culture (2015). N = 11,611. Universe: Danes age 12+ with access to Internet

from voicing a divergent viewpoint, it will make the prevailing viewpoint appear even more dominant to others, which will, in turn, prevent even more people from voicing conflicting opinions.

The spiral of silence is not just a dynamic of social network media but is a general social psychological mechanism. Its enhanced importance in social network media likely results from the particular communicative characteristics of such media. Marwick and Boyd (2010) argue that social network media are characterized by a so-called *context collapse* because of the mixed audience and communicative situation. On a social network media such as Facebook, a network of “friends” usually consists of a very mixed set of people, with whom the individual has rather different types of relationships. Some are family or close friends, i.e., relationships characterized by strong ties, while others are more superficial acquaintances from very different social settings, e.g., school, work, travel, etc. In such a context, it is usually more difficult to predict which opinions others will hold on various topics, and there is similar uncertainty regarding the communicative situation and context: Is this a public or private situation, or is it something else entirely?

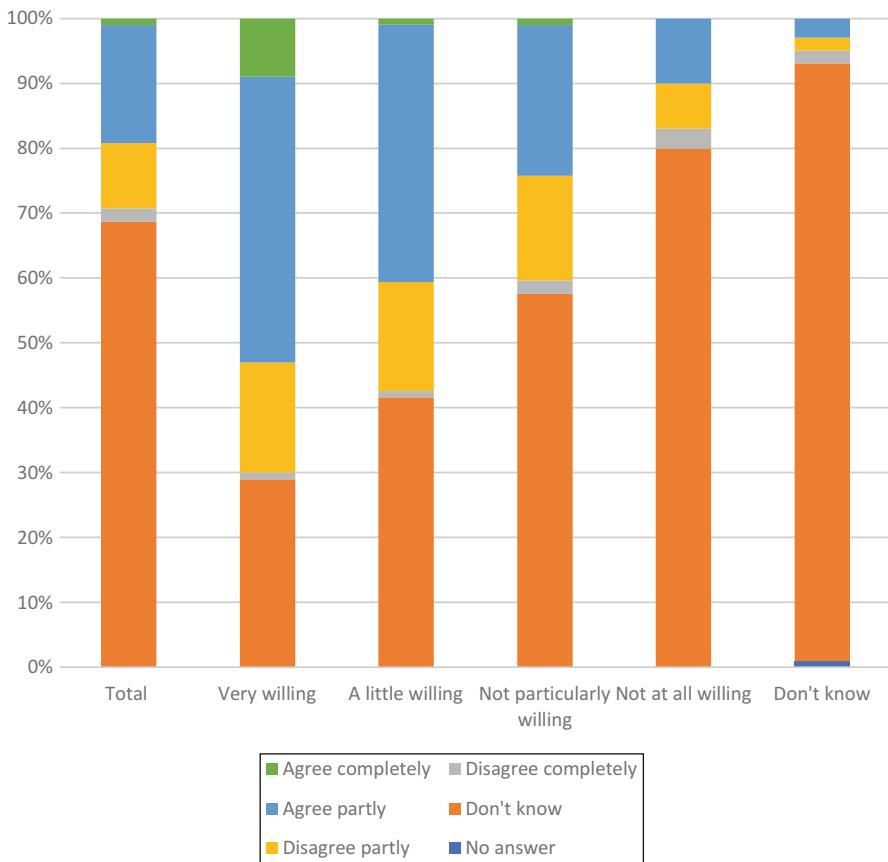


Fig. 2 Willingness to discuss controversial issues on social network media: Relationship between your own point of view and perceived agreement or disagreement among friends on social network media. Source: Index Danmark/TNS Gallup and Danish Agency of Culture (2015). N = 8284. Universe: Danes age 12+ with profile on social media

Such uncertainties may make the spiral of silence more prevalent in social network media compared to other communicative contexts. As a result, many people will choose to maintain a sociable tone in order to ensure they do not lose face and recognition vis-à-vis other people in their network. This tendency is also supported by a study of politically active young Norwegians' use of social network media. Members of political youth organizations would often use Facebook as a tool to organize political meetings and other political events, but when it came to the question of expressing political viewpoints, many chose to abstain from this in the mixed context of Facebook in order to avoid alienating themselves from others (Storsul 2014). It is furthermore worth noting that the social psychological mechanism of the spiral of silence is underpinned by algorithms that create network connections by coupling already popular ideas with

individuals. The development of digital filter bubbles (Pariser 2011) may increase exposure to uniform viewpoints, which may cause people to refrain from voicing contradictory viewpoints.

Network: An Intensified Form of Mediatization

The study of mediatization involves a diachronic dimension, i.e., the historical processes of change within which media play a role in transforming culture and society, and a synchronic dimension focusing on the ways in which media come to create new conditions for communication and interaction between humans (Hjarvard 2017). As this chapter has hopefully demonstrated, the spread of various forms of network media plays a role in both dimensions. They have underpinned the formation of a global social order, a network society that has changed both collective power structures and the role of the individual vis-à-vis the collective network. Network media are, evidently, neither the only nor necessarily the most important agent of change. Historically, various forms of network have always influenced the organizational structure of culture and society. But the advent of a new and global digital infrastructure has both challenged existing bureaucratic organizational forms and helped build new and more network-oriented forms of collective association.

The Internet in general and social network media in particular have, furthermore, created new conditions for communication and interaction. Network media have different characteristics from mass media, and their functionality is influenced by new logics such as connectivity and datafication. Network media have expanded communicative possibilities, especially for individuals, at the same time as the logics of network media have made certain aspects of communication more prevalent than others. As the example of the spiral of silence effect in social network media demonstrates, the interplay between general mechanisms of social psychology and specific logics of the media influences the extent to which users will address certain topics.

Mediatization as a historical process has evoked change in both “big” societal institution, such as politics, and “small” contexts of civil society and everyday life, such as the home. The spread of mass media such as newspapers, radio, and television has decisively influenced the political institution and created a common public sphere, which is being managed by the news media to a greater extent than ever before. Various forms of digital network media also influence the “big” societal institutions, for instance, the ways in which public administration is conducted. But due to their interactivity and ubiquitous presence, they bring about an especially intensified mediatization of the many contexts of civil society. Social network media logics influence how everyday communication and interaction play out in the family, the school, and the workplace, between close friends, and within an extended network of acquaintances. The intensified presence of media is not only reflected in the quantitative fact that we spend more time on media than ever before but is also increasingly visible in the ways in which media change relationships and forms of interaction in the micro contexts of everyday life.

References

- Baym N (2015) Personal connections in the digital age, 2nd edn. Polity, Cambridge
- Bell D (1973) The coming of post-industrial society: a venture in social forecasting. Basic Books, New York
- Castells M (1996–1998) The information age: economy, society and culture, vol I–III. Blackwell, Oxford
- Castells M (2009) Communication power. Oxford University Press, Oxford
- Castells M (2011) A network theory of power. *Int J Commun* 5(2011):773–787
- Curran J, Fenton N, Freedman D (2012) Misunderstanding the internet. Routledge, London
- Danish Agency of Culture (2015) Sociale medier – brug, interesseområder og debatlyst. [Social media – usage, interest areas, and willingness to discuss] Danish Agency of Culture, Copenhagen. <http://slks.dk/mediernes-udvikling-2015/specialrapporter/sociale-medier/>. Accessed 12 Oct 2017
- Ellison NB, Boyd D (2013) Sociality through social network sites. In: Dutton WB (ed) *The Oxford handbook of internet studies*. Oxford University Press, Oxford, pp 151–172
- Fladmoe A, Sten-Johnsen K (2017) Willingness to discuss the publishing of religious cartoons. Spiral of silence in the private and public sphere. In: Midtbøen AH, Steen-Johnsen K, Thorbjørnsrud K (eds) *Boundary struggles. Contestsations of free speech in the public sphere*. Cappelen Damm Akademisk, Oslo, pp 77–108
- Giddens A (1984) *The constitution of society*. Polity Press, Cambridge
- Granovetter MS (1973) The strength of weak ties. *Am J Sociol* 78(6):1660–1680
- Greimas AJ (1983/1966) Structural semantics: an attempt at a method. University of Nebraska Press, Nebraska
- Hjarvard S (2013) The mediatization of culture and society. Routledge, London
- Hjarvard S (2017) Mediatization. In: Rössler P, Hoffner CA, v Zoonen L (eds) *International encyclopedia of media effects*. Vol. 3 critical theory approaches to media effects. Wiley-Blackwell, Malden, pp 1221–1241
- Klastrup L (2016) Sociale netværksmedier. [Social Network Media] Samfunds litteratur, Frederiksberg
- Klinger U, Svensson J (2015) The emergence of network media logic in political communication: a theoretical approach. *New Media Soc* 17(8):1.241–1.257
- Lévy-Strauss C (1969) The elementary structures of kinship. Eyre & Spottiswoode, London
- Lundby K (ed) (2014) The mediatization of communication. de Gruyter, Berlin
- March JJ, Olsen J (1989) Rediscovering institutions. The Free Press, New York
- Marwick AE, Boyd D (2010) I tweet honestly, I tweet passionately: twitter users, context collapse, and the imagined audience. *New Media Soc* 13(1):114–133
- Monge PR, Contractor NS (2003) Theories of communication networks. Oxford University Press, Oxford
- Morozov E (2011) The net delusion. How not to liberate the world. Allen Lane, London
- Negroponte N (1995) Being digital. Hodder and Stoughton, London
- Newman N, Fletcher R, Kalogeropoulos A, Levy DAL, Nielsen RK (2017) Reuters institute digital news report 2017. Reuters Institute for the Study of Journalism, Oxford
- Noelle-Neumann E (1993) The spiral of silence. Public opinion – our social skin. University of Chicago Press, Chicago
- Papacharissi Z (2015) We have always been social. *Soc Media Soc* 1(1):1–2
- Pariser E (2011) The filter bubble – what the internet is hiding from you. Penguin Press, New York
- Pedersen OK (2013) Political globalization and the competition state. In: Brincker B (ed) *Introduction to political sociology*. Hans Reitzel, Copenhagen, pp 281–298
- Pew Research Center (2014) Social media and the ‘spiral of silence’. http://www.pewinternet.org/files/2014/08/PI_Social-networks-and-debate_082614.pdf. Accessed 11 Oct 2017
- Rainie L, Wellman B (2014) Networked. The new social operating system. MIT Press, Cambridge, MA

- Riesman D (1969/1950) *The lonely crowd. A study of the changing American character*, 2nd edn. Yale University Press, New Haven/London
- Ritzer G (1993) *The McDonaldization of society*. Pine Forge Press, Thousand Oaks
- Sacco V, Bossio D (2017) Don't tweet this! How journalists and media organizations negotiate tensions emerging from the implementation of social media policy in newsrooms. *Digit J* 5(2):177–193
- Smith JH (2007) Tragedies of the ludic commons – understanding cooperation in multiplayer games. *Game Stud* 7(1). <http://gamestudies.org/0701/articles.smith>. Accessed 11 Oct 2017
- Stones R (2005) *Structuration theory*. Palgrave, New York
- Storsul T (2014) Deliberation or self-presentation? Young people, politics and social media. *Nordicom Review* 35(2):17–28
- Touraine A (1974) *The post-industrial society. Tomorrow's social history: classes, conflicts and culture in the programmed society*. Wildwood House, London
- Turkle S (1984) *The second self, computers and the human spirit*. Simon and Schuster, New York
- Turkle S (1997) *Life on the screen, identity in the age of the internet*. Phoenix, London
- Turkle S (2011) *Alone together. Why we expect more from technology and less from each other*. Basic Books, New York
- Turner F (2006) *From counterculture to cyberspace. Steward brand, the whole earth network, and the rise of digital utopianism*. University of Chicago Press, Chicago
- van Dijck J (2013) *The culture of connectivity. A critical history of social media*. Oxford University Press, Oxford
- van Dijck J, Poell T (2013) Understanding social media logic. *Media Commun* 1(1):2–14
- van Dijk J (2012) *The network society*, 3rd edn. Sage, London
- Weber M (1947) *The theory of social and economic organization*. The Free Press, New York



Jeremy Hunsinger

Contents

Introduction: Internet Studies	264
To Be Critical...	267
Some Mutually Constructed Problems of Critical Internet Studies	272
Critical Internet Studies?	273
The Foundations Are Courage and Responsibility	277
References	277

Abstract

This handbook chapter is an essay supporting an engaged field called critical internet studies. It attempts to describe internet studies and critical internet studies, empowering the field to go forward, inviting an openness to the field with an eye to inclusion instead of performing the heavy boundary-work of exclusion. It attempts to describe critical internet studies broadly while maintaining a critical perspective on some of the claims as to what must be critical internet studies.

Keywords

Internet studies · Internet research · Critical perspectives · Critical internet studies · Critical internet research

This is an essay supporting an engaged field called critical internet studies. It attempts to describe internet studies and critical internet studies, empowering the field to go forward, inviting an openness to the field with an eye to inclusion instead of performing the heavy boundary-work of exclusion.

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada
e-mail: jhunsinger@wlu.ca

Introduction: Internet Studies

Critical internet studies is an underdefined field. It has many contributors from a variety of disciplinary and interdisciplinary backgrounds. It is the sum of these contributions that defines the field best. This chapter will attempt to provide some definition to the field without being determinate or exclusive. Critical research derives from many research traditions and there is significant boundary-work being performed between those traditions (Gieryn 1983; Star and Griesemer 1989). In a myriad of those traditions, there are many counter-traditions, exceptions, and matters that do not fit harmoniously. However, before we discuss what the “critical” of critical internet studies is, it is necessary to establish what we mean by internet studies. There have been several handbooks already written about the field (Consalvo and Ess 2011; Dutton 2013). Those handbooks and the prior *International Handbook of Internet Research* provide an overview of the field (Hunsinger et al. 2010). What follows in this introductory section is an overview of internet studies.

Internet studies is the study of the internet, and the internet is a complicated assemblage of people, institution, technics, and technologies designed to allow for the transmission of information between devices (Hunsinger 2009). The internet is also the “network of networks,” but it is so much more.

The internet starts with the everyday user whose experience begins with the endpoints. There are endpoint technologies and devices and the people, institutions, or technologies using those endpoints. These endpoints are your computers, tablets, phones, watches, servers, clouds, and other interfaces through which you connect to the internet. These devices connect to a network which is usually not directly part of the internet but in some cases might directly connect to the internet. The network is generally called a local network and can be wired or wireless; it might run on non-internet-centric protocols. These local networks usually are administered locally and often connect to the internet via an access point usually owned by an internet service provider. The access point wraps any information it receives into the TCP/IP protocol, which is one of the primary protocols of the internet. The information then enters the internet systems proper. The internet systems are primarily backbones, points-of-presence (pops), domain naming systems, routing systems, and related technologies. These systems are all owned by service providers usually telecoms, nonprofits, or governments. These internet assemblages have administrators who are paid by a wide variety of entities. The information originated on the original endpoint is sent from point to point via the internet attempting to reach the other endpoint. The information, wrapped in TCP/IP packets, travels one or several paths, routed through the internet, until it reaches the other endpoint, possibly having been intercepted for surveillance and almost certainly having been monitored for operational reasons. Once a packet of information arrives, confirmation of receipt is returned to the originating endpoint, and the process continues. There are other steps that aren’t listed above that complicate matters a bit, but

this is a rough approximation. Keep in mind this is very much a simplification of the internet.

Oversimplifying the internet as described above helps us to understand the deep complexities of the internet. The internet's complexity is more than most people imagine and many significant careers have occurred in its development and history. Internet studies might study any part of this complexity. Internet studies may involve empirical studies investigating people or groups of people in some manner, and the people might be users, game players, audiences, employees, managers, governors, police, technologists, technology managers, engineers, security specialists, opinion leaders, fashionistas, or just about any person working, playing, or otherwise interacting with the internet. Internet studies might also investigate the endpoint technologies used to access the internet and communicate to the internet, such as watches, phones, tablets, computers, surveillance cameras, automobiles, universities, power grids, nuclear reactors, and such. Or it might study the interfaces and applications used through/with/in the internet, like browsers, e-mail clients, content management systems, version control systems, etc. Internet studies might also investigate the institutions around the internet, such as governments, technology firms, nongovernmental organizations, treaty organizations, lobbying firms, and similar. Or they might examine the organizations directly involved with the internet, like the Internet Engineering Task Force, the Internet Society, the Internet Corporation for Assigned Names and Numbers, The Internet Assigned Numbers Authority, Réseaux IP Européens, the United Nations Working Group for Internet Governance, the Internet Governance Forum, the International Telecommunications Union, several leading Universities and research centers, or any number of regional, national, and subnational internet governance entities.

Internet studies might study the infrastructures of the internet and their relations, such as firewalls, routers, backbones, Domain Name Service servers, web hosting servers, storage servers, database systems, email systems, cloud systems, or any related matters. Similarly they might be studying the protocols, and their relations, such as DHCP, DNS, FTP, HTTP, IMAP, LDAP, NNTP, NTP, POP and such on the application layer, TCP, UDP and such on the transport layer, IP, ICMP, IPSec and such on the internet layer, and ARP, PPP, ISDN, DSL and others on the link layer. Each of these infrastructures and protocols has histories, social, political, and ethical relations and frequently are in ongoing development and sometimes albeit rarely they undergo radical change.

Internet studies might research content and its creation, whether by humans, institutions, or machines. Those might be hyper/texts, mixed media systems, web pages, video or related games, memes or content related to work, research, teaching, or news such as YouTube, Apple News, Blackboard, Hulu, or the millions of updates and comments that circulate on social network sites like Facebook, Instagram, and Twitter, and any number of other systems operating primarily through internet-based technologies. Similarly, they might study the practices related to content, such as game playing, consumption, the affective labor by internet celebrities, and any number of the thousands of daily experiences of the internet performed by

people and machines. They might further research the algorithms, codes, software, databases, and other information enabling those internet services.

Internet studies also might research politics, political economy, cultures, subcultures, the *socius* related to any of the internets such as dark web communities, Reddit users, /b/, Amazon, Twitch, Second Life, or innumerable others. Race, gender, ethnicities, and similar are also engaging topics of internet studies. Feminist studies are significant in the field of internet studies, as are LGBTQ studies. On a more abstract lever, the members of the field might also study cultural, social, or economic categories and their internet activities either individually or in contrast to other social categories. Some researchers also study cognitive, psychological, memetic, imaginaries, or other related topics. Internet studies also explores the problematic interaction between people, institutions, and groups on the internet such as harassment, bullying, threats, criminal acts, and related matters.

Internet studies might research the ethics and practice of internet studies. It also studies the methods of internet studies. The field also analyzes the institutionalization of internet studies. These three elements provide the internal strength of the field as they ensure its reflexivity, its contexts, and its relations (Bourdieu 2004; Hunsinger 2005).

Finally, we should not forget those researchers and researcher-practitioners who build, make, hack, crack, design, host, or otherwise perform internet research as research-in-action. They build new versions of things, experiment with internet projects, and try to solve or create problems to shine a light on the internet's issues. These people, while few, empower many others. The individuals reflexively practicing pedagogies and andragogies concerning the internet also are producing internet studies and hopefully creating an informed populace which may engage in more internet studies and appropriate internet use.

Most interestingly, studies of the internet are frequently complex because the interactions of all the above and more are studied in re/mixes, combining a few or many approaches or topics in order to synthesize new understandings of the internet. This relationality makes for a massively complex and broad field of study. Realizing this complexity is one of the bases of some modes of critical research (Jessop and Sum 2016). Internet research is as such underdetermined and overdetermined in exciting ways, much like was said about the internet years ago (Poster 2001).

Internet studies generally sets out to understand the internet and everything related to it in some direct manner. It is a deep and engaging field of research covering and cutting across many disciplines, interdisciplinary in many aspects, and transdisciplinary in some.

This list is not exclusive, representative, nor even very extensive. Every day, through my participation in various communities of scholars on the internet, I learn of someone doing research about elements of the internet that are new to me. Internet studies, as is the case with all other academic disciplines, is not without its inherent problems, occasional in-fighting or occasional boundary-work. But it is a rich and growing field, that is worthy of engagement.

To Be Critical...

Any given theoretical position is not necessarily going to make something critical, even if that position is traditionally considered critical. So Marxist internet studies, which should be critical, occasionally are not. Similarly, the Popperian model of criticism as identifying logical or other contradictions is not necessarily critical, though it is undoubtedly productive (Fuchs 2011). Fundamental to doing critical work is the development of critical consciousness, critical awareness, critical disposition, critical acumen, or as I tend to think about it following Boltanski and Thévenot, “critical capacity” (Boltanski and Thévenot 1999). This capacity need not arise from traditional origins of critical thought but those traditions can help refine and develop it. Kant, Post-Kantian, Hegelian, Marxist, Post-Marxist, Wittgensteinian, Frankfurt School, Critical Feminist Theories, Poststructuralist Theories, Queer Theories, Cultural Theories, and others all have significant contributions to coming to have the capacity to be critical. However, we should not rely on traditional critical categories, critical methods, and/or ideologies to identify criticality or critical capacity, because the acritical, normalizing, and regressive agendas have long since appropriated the tools of criticality. Elites, consumerists, and other capitalist organs have also appropriated criticality and its techniques, and they continually seek to encode the critical as a market and/or tool of plutocratic hegemony. Any number of other agendas have also used critical tools, sometimes to positive ends, sometimes not. Instead of looking toward traditions, we should think deeply about the nature of critical studies and consider what makes something a critical study.

In its loosest contrivance, criticality is a constructed literary language-game as M.H. Abrams would have it. For some, this is undoubtedly true and likely certainly fun:

Each critical theorist, it can be said, pursuing his particular interests and purposes, selects and specializes his operative and categorical terms, and in consequence sets up a distinctive language-game whose playing field overlaps but doesn't coincide with other critical language-games and which is played according to grammatico-logical rules in some degree special to itself. (Abrams and Fischer 1991)

There is more to playing the game than the grammatico-logical rules; there are normative and teleological games at play too. There may be other games, but for criticality, there is almost always a good to be obtained and an end. How we construct those ends/goods and in what relations they operate are entirely diverse and best thought of as plural. Almost every end or good also has and implies their opposite or anti-end/good. These ends/goods also imply and sometimes require several other states in other relations. In short, to be critical, you must have some goal and something justifying the goal and makes it be just, free, good, equitable, equal, or whatever normative framework you engage and hope to resolve into the world.

Much critical work aspires toward emancipation, (Kofman 2018; Latour 2004a, b; Marcuse 1971). It tries to develop a space for action or space for thought through which we can act and thus be freer than we once were. It tries to look inside, behind, underneath, etc. to shine the light of knowledge (enlightenment) to allow people to be more free. It might also pursue other modes of emancipation, but while freedom is one of a set of perpetual teleologies of many critical modes of research, it is also a mode leading us into a form of authoritarian emancipation, which is forcing people to be free in ways that suppress the ways they wish to be. Critical work can be as oppressive as any other form of research. Critical work does need to take particular care to realize that the freedoms an academic or other life of privilege might provide or prefer are not universally recognized as the best freedoms or sometimes even recognized as freedoms (the golden-handcuffs of academia). Our (academic) goods are like other normative and teleological goals noted above. Thus, when we are critical as internet scholars, we need to realize the plurality of possibilities on which people are building their hopes. Not everyone wants to be like us, nor should they. That said, some people will not choose some goods, and education has not necessarily been able to lead them to choose those goods; Critical researchers must recognize both the autonomy and chosen non-autonomies of people if the researchers are aimed at emancipations or enlightenments.

Criticality and critical capacity tend to have a good deal of reflexivity with its general awareness of one's position. Critical methods can be used to gain reflexivity. Sometimes this reflexivity allows us to defamiliarize ourselves or become estranged from one's position in order to gain a new perspective or understanding. Reflexivity may help us see revolutions for what they are by seeing the reproductions and reifications internal to them. Reflexively we can see the socio-cultural-political-aesthetic reproduction and perhaps find a transversal or tangential strategy to break the cycle of reproduction/revolution (Bourdieu 1992, 2004; Bourdieu and Passeron 1990; Deleuze and Guattari 1988; Guattari 1984, 1995, 1996). Reflexivity toward our ends/goods provide the possibility of the new *strategy* and *praxis* tends to provide the capacity. We develop this praxis from continued critical practice, which is tied to the hope for the realization of our ends/goods.

Tradition distinguishes the critical from the administrative (Horkheimer 1982; Lazarsfeld 1941; Smythe and Van Dinh 1983). This distinction is helpful and directive, but not definitive. The difference according to Lazarsfeld is that critical research provides, "a theory of the prevailing social trends of our time" and a method of appraising those trends about values (Lazarsfeld 1941 in Fuchs). Or as Fuchs describes it as "critical theory ... analyzes how society is related to processes of oppression, exploitation and domination," which he then describes as making normative judgments against those processes (Fuchs 2011). This mode of analysis is central to some critique and critical research, but not all; similarly, it is true of some critical theories. We can think of administrative research as research centered on efficiencies, appropriate operation, economic concerns, distributive justice, and other issues involved with maintaining and improving the current conditions, perhaps even innovatively. Even administrative research may have various normative goals that may, intentionally or unintentionally, free us from domination,

but having satisfactory results does not make administrative research into critical research. Accidentally transformative research is different from research based on either critical praxis or the hope for change and perhaps even to act for change.

To be critical is not merely to be from the tradition of Critical Theory and its Kantian and other progenitors though; as noted earlier, it is possible to come from any number of theoretical traditions and be critical. For instance, one can be critical from the position of enlightenment liberalism, feminism, postmodernism, or communitarianism among others. To be critical only requires one to be engaged in the theoretical and transformative labors of producing hope, justice, and possibly even social transformation toward a better society and not taking the internet as it is, is being produced, or owned as a given.

Making normative judgments is central to critical theory and critical research (Benhabib 1981, 1986). We base our judgments in any number of politico-ethico-aesthetic positions and theoretical apparatus. Domination, liberation, exploitation, oppression, cosmopolitanism, intersectionality, and many others have normative positions coming into play for some critical researchers. Few researchers could adopt all these normative positions because of their other axiological commitments. Also, some of these normative positions are more fashionable or more accepted contemporaneously than others. For instance, few people in academia read De Sade and take his perspective on freedom and liberation in our everyday lives. De Sade isn't fashionable, though inarguably these perspectives still have some cultural relevance for analysis either as norms or antinorms for normative judgments. The traditions and contemporary fashion industries of the academy should not necessarily determine the normative judgments. However, to some extent, there are cadres that situate themselves in certain theoretical traditions, defining that tradition's current life, and determining the popularity of that and other traditions from the cadre's position. Sometimes these cadres produce a superstar, and that can produce problems with popularity internally and externally to the cadre and its theoretical position.

Being critical has also been undermined by the careerist constructions of the academy, for instance, the need to "train" doctoral students in ways aimed to enable their career (Luke 2016). Following the neoliberal reconstruction of academic identity with its market-driven and careerist ethos at career launch, many early career academics are then thrust into either the potboiler environment of part-time work as adjunct professors, reacquainted with developing a postdoc identity, or thrown into the fire of the tenure-track position. Each of these situations is heavily invested in constructions of overwork and identity development eschewing critical thought, theoretical work, or judgmental work in favor of grinding out the fashionable or popular research of the day (Luke 2016). In other words, the neoliberal productivist model of the university researcher fundamentally undermines the capacity to be critical, and it does so in support of the neoliberal ontology of value. We need to be critical about our own careers in order to be reflexively situated to develop our own critical capacity and the critical capacity of our students.

We need this critical capacity to confront the challenges of internet critically. Whether we are thinking about how algorithms order our lives, the blackboxing

and/or domesticizing of internet systems, new systems of online trust constructed in blockchain, network neutrality, or the appification of our everyday life in Facebook/Tinder/etc. The problems confronting a critical internet researcher are manifold; choosing among them is difficult, and when the academic production machines are pressing you to produce more, it is hard to find the time to do that well, especially when presented with more timely or fashionable options. Critical internet researchers do persevere though, usually grounding their work in the doctoral training, focusing narrowly yet critically, and attempting to pass on their knowledge to the next generation.

It is hard to be critical, and it is harder to be critical when most people don't understand what it means.

Traditionally, the concept "critical" comes from critique from the Greek word "kritike." Kritike relates to judgement which is a requirement for phronesis or practical reason; it is the part that deals with judgment and distinguishing differences. Practical wisdom is the capacity to manage our lives and as an extension to govern society. Critique is art or practice (*techne*) that takes time to develop, much as Aristotle said of practical wisdom. Critique is much like sailing a ship; it is bringing together several activities with several knowledges that make it a success or not. It is bringing those knowledges together through your life and making important political and ethical distinctions and judgments that makes something critical.

To be critical requires engagement in the politico-ethico-aesthetic spheres of everyday life. It requires knowledge of how we construct meaning, construct our lives, and construct our politico-ethico-aesthetic environments. It also requires us to recognize these environments as plural and in contention by progressive and regressive factions.

What makes something critical then? The critical, in my mind, proposes a hope for difference, a future-oriented toward justice, freedom, or another socio-cultural possibility, usually originating in modernity, but occasionally of something else. All critique presupposes the possibility of a different world and the idea that we can/should work toward the new world. Hope requires one to have a model of society or a theory of society that provides for the realization of the hope. It is a model or theory of what is possible for society.

Similarly, following Kant and Butler, the critical or "critique is not merely or only a sort of nay-saying, an effort to take apart and demolish an existing structure. Rather, critique is the operations to understand how delimited conditions form the basis for the legitimate use of reason to determine what can be known, what must be done, and what may be hoped – the three aims of critique as Kant formulated them." (Butler 2009). So there is always a normative goal, a hope for critique, and a seeking of knowledge to which we use reason to find a way to act.

Critical work also involves action but might be engaged at any level of analysis from the seemingly superficial, to the hidden depths. It frequently is disposed to engage the perpetual crises of our contemporary neoliberal capitalism, whether they be class vs. class, humanity vs. nature, or whatever is driving the profits of corporations at the moment. Critical studies tend to engage with the crisis as event. Because crises can be rethought, redescribed, and perhaps even resolved.

Crises form a possible point of disjunction from the current situation and thus a point of hope.

One word to think of when thinking about critical studies of the internet or anything else is “intervention.” What are is the research intervening in? Where is the locus of the intervention? Once in mind, one can see the hope and teleology behind the research driving it forward. The hope and teleological ends must be more than knowledge itself; criticality must engage with some further ends for society or our world. The ends may be inward or externally derived (Wolin 1987). Either way, the ends mediates the conceptualization of the critical itself (Wolin 1987).

To intervene requires a depth of knowledge of the situation and oneself, and the capacity to situate oneself for intervention, this requires reflexive knowledge (Beck et al. 1995; Bourdieu 2004). However, the corporations and governments tend not to treat the internet reflexively, but instrumentally. The internet and new technologies have long been colonized by instrumentality (Poster 2001). Whereas instrumentality primarily is a means to an end, reflexivity is knowledge of the relations surrounding oneself as it is situated, including one’s hopes and the hopes of others in society (Bourdieu 2004). It requires one to have an ethics and an awareness of the ethos/ethico-politico-aesthetic constructs in which they exist. Most people have an appreciation of this ethos innately, but we can develop and refine our reflexive capacities.

Critical research requires reflexive knowledge and situated knowledge, but critical knowledge is not necessarily the same as the other two. Critical knowledge relates strongly to earlier conceptions of critical reason and in an Aristotelian or pragmatist tradition derives from the combination of thinking, passion, and experience. Horkheimer distinguishes instrumental and critical reason (Horkheimer 2012; Horkheimer and Adorno 2002; Marcuse 2013). Instrumental reason is, to paraphrase Utah Philips, the whistles and levers of our minds, installed or inculcated there to make us more efficient and more automated. Instrumental reason makes human beings act like a machine (Fuchs 2011; Horkheimer 2013; Marcuse 2013; Phillips 1993). It seeks, like administrative research, to maintain the ‘proper ordering of society’. Critical research aims to change society toward a better model realizing the hope implicit in it.

Critical research frequently deals with disjunctions where the critical-theoretical positions and the imaginations/measurements/interviews/other theories/etc./ of the world do not necessarily meet (Jessop and Sum 2016). Disjunctions are commonplace in our society and indicate a space where explanation and critical research is needed. Sometimes our larger-framed theories only need middle-range theories to overcome disjunctions, but sometimes they require further inquiry into finding what is happening. Other times, the larger theories do describe what is going on but require translation, understanding, or interpretation of the underlying causes into a theoretical framework (Jessop, 106.) (Jessop and Sum also have an eight-step method that can help people new to critical approaches to perform adequately in the field).

To limit the modes of critique or the methods of the critical is unwise, unwarranted, and frequently a worthless pursuit. But it is a pursuit many elder

statespeople of academic have sought to do (Kofman 2018; Latour 2004b). They try to acclaim only the methods they espouse, or they favor them as critical studies; luckily, critical internet studies do not yet have those sorts of elder statespeople. Instead, what we have is people willing to encourage a broad field in pursuit of some vision of a better field or a better object of their field of study. Deeply critical research takes a knowledge and awareness of the tradition one gains through years of reading in the tradition. While the internet is seemingly a relatively recent technology at around 60 years old at the time of this chapter, critical internet studies is not much newer. However, critical internet studies arose in relation to several other critical areas, such as critical communication studies, critical media studies, and critical technology studies, which are much older than the internet.

Some Mutually Constructed Problems of Critical Internet Studies

Sometimes the problems of a field help to define a field. The following is by no means a complete list of the problems of critical internet studies, but this section attempts to provide a few problems that indicate some of the strengths of the field.

Critical studies are sometimes critiqued as biased, judgmental, frequently empirical, impassioned, rarely atheoretical, occasionally reflexive, and rarely objective in either the positivist or administrative manner. Critical internet studies have goals; goals resting on the shoulders of those authoring the studies, and the shoulders of those that came before them, and the ones that stand with them. The quality of the work of criticism does not necessarily reside in the disciplinary or interdisciplinary in which it exists though; it exists within the community/ies recognizing and valuing its traditions and the innovations arising from those traditions. Already, critical internet studies comprises many traditions and influences with some theorists and critics such as Marx, Habermas, Butler, Goffman, Foucault, Haraway being perennial favorites of internet studies conference bingo, even if some of those scholars never or rarely speak of the internet at all. But engaging in popularity does not necessarily make ones work critical, just as engaging in Marxism may not either. Thus the external communities that attempt to critique critical internet studies as biased or otherwise are likely doing so because they are doing academic boundary work, trying to define their or some other work as not critical internet studies (Gieryn 1983; Star and Griesemer 1989).

Popularity, or more specifically the lack thereof, is a problem with criticality, and critical internet studies have the same issues with popularity as other academic disciplines or areas of research. It also has its issues with rigor, precisely, exactitude, meaningfulness, etc. It might have any given problem than any other academic work has. Given that it is normal, what problems should it then not have? Critical studies should never lack passion, even if the passion is misguided according to other possible positions. It should never lack focus and clarity around its focus, because how can we change what we don't understand. However, clarity should not be a goal for its own sake, because clarity can be used to obfuscate through oversimplification

and thus mislead an audience to a solution. Critical internet studies and most critical studies should try to be as complicated as its object allows and clarify what we can clarify without impinging upon other scholarly values. Thus the problem of popularity is a good problem to have as more critical work enters the mainstream, but issues of rigor and related matters is something that derives from taking care of our community in our academic processes such as peer review, where constrictive criticism, collegiality, and kindness with an aim to improvement of the field should guide us.

Critical internet studies, like all critique, stands in dialogic and occasionally dialectical relation to the object of its criticism. A difference must exist between the existence of what we critique and the critique itself. This difference is a theoretical space from which futures or syntheses arise. One crucial challenge though is the lack of necessity in the critique or the thing being critiqued determining in any necessary way the future engages positively or progressively with the critique, and critique does sometimes bring about regressive or repressive futures. It sometimes not enough to merely engage with knowledge, sometimes you must engage politically, culturally, ethically, and/or aesthetically to bring about the change the critique implies. Thus the solution to this problem, as with every critical field, is praxis.

Critical Internet Studies?

Critical internet studies has several responsibilities that allow it to be distinguished from critical media studies and other fields; some of which overlap with other fields, but some of which are central to its topic. Critical internet studies is responsible for the critique of the thingness of the internet, the material, the material cultures, the digital materialities, and their relations. In other words, critical internet studies must engage on some level with the material realities of the internet such as its software and hardware and those owning and regulating it. If it does not deal with these topics, it is hardly dealing with the internet. It should also consider and perhaps reveal the role these materialities play in our society. Not all research needs to address all of it, but if it discusses none of it, then it is not critical internet studies but is likely critical audience studies, critical media studies, critical technology studies, or critical information studies, each of which overlaps with critical internet studies when they deal with the internet.

Critical internet research has a responsibility to engage with the discourses, ideologies, social imaginaries, and fictions at all levels of the internet and internet research. What people believe about the internet dramatically influences how they use it. Researchers do not necessarily have to be arguing that the understandings are wrong, but within their critical frameworks, they should provide a possibility for people to make progress, requiring critical internet studies researchers to be aware and engaged with the cognitive constructions around the internet, the distributed cognitions, the communicative constructs, and related matters from their perspective. This care to the spheres of meaning generation and distribution

is necessary, because it is one of the primary modes in which the internet operates, whether it is through cute cat pictures, 280-character messages, or some other meaning constructive utterance. Regarding utterances, as the internet is a medium of utterances, critical internet studies has a responsibility to ask the perpetual question of “in whose interest?” or “who benefits” from the actions, policies, or utterances. The care of this is part the function of critique and being critical described above.

Critical Internet studies starts from the combination of internet studies and the critical. It embodies a plurality of hopes and teleologies combined the prospectives of difference. It begins with recognizing the internet we have is historically contingent, and it arose in conjunction of specific contexts and as such the internet has several competing knowledges claiming its history. Its history or histories is a set of ongoing disagreements and clarifications both technical and social which sometimes have come to reasonable completion, but sometimes are still ongoing. Secondly, critical internet studies must admit the internet in itself rarely solves any problems, but the efforts of humanity on the internet may bring about change for better or worse. Thirdly, critical internet scholars must recognize the internet arose about empire, socio-economic repression, racism, gender issues, and thousands of other deeply problematic situations of our modern age and those situations are still present on the internet. Fourthly, critical internet studies should recognize that the creation and relations of recent technologies and human-technological assemblages on the internet happen all the time, and they need not produce any hope in themselves, though they certainly will enable change. Fifth, the politico-ethico-aesthetic contexts of the internet are not necessarily separable from the rest of our milieu, but occasionally they are. That is to say, certain elements of the contexts of the internet might be separable in some ways from the broader world in which they exist, but it is rare. For instance, online bullying is subtly different from offline bullying because it can at times, due to distance, remove the physical aspect of bullying. However, that they are subtly different sometimes does not mean that the general increase in bullying in culture is different online or offline, the general increase is about both. As such we need to take particular care as critical internet researchers to be aware of the specificities of context and milieu.

There are many ongoing questions about the internet that researchers are starting to engage with, but the critical point of critical internet studies is the commitment to some end entailing hope. Hope does not mean the end argued for is necessarily the best. One of the classic issues of the internet is the discussion of what the best principles for the design of the internet is: should it be an orderly system or a disorderly system, should it be bureaucratically organized, or should it be emergent and self-organizing? The nature of this technological assemblage is an essentially contested position for those engaging with the internet as a field of study, even if they do not necessarily address it (Connolly 1993; Gallie 1956). For instance, there is currently great concern about the nature of privacy and private information on the internet. Some internet researchers base their research on ideas of privacy, security, and trust and take the nature of those concepts to be well-defined, knowable, and occasionally even certain. For some disciplinary endeavors that may be the

case, but in practice, on the internet and in internet development, they are not well-defined or certain, but they are products of emergent assemblages of actors and technologies. They are not necessarily well-ordered or even well-known outside of the practices developing in relation to them. The attempt to bring these well-ordered, well-defined, and certain ideas into the ongoing creative mess and attempt to preserve their original constructs in the new milieu is in part denying the fluidity and transmutability of them as constructs. Difficulties like these do not discredit or undermine those scholar's work and research. They assume the well-ordered techno-philosophical system, because it is one way of understanding the internet. It is interesting that the lived everyday experience of privacy for many people on the internet has no real relation to the well-ordered internet because we must agree that for some people, a well-ordered internet is a normative goal.

One aspect of critical internet studies, which defines some of the field, is to be found in specificity over universality. Following Foucault, some of critical internet studies engaged less with the idea that the hope they have is the "just and true for all" or the universal justice, as much as it is the justice of specific instances based in the researcher's expertise. Sometimes this specificity leads to clever work, and other times it should be resisted. It should be resisted when what is at stake might be thought of by the researcher to be a universal value or a basic need. But otherwise, the researcher will find an intersectional point where their expertise gives them the privilege to speak and advocate for hope and change. Foucault calls this the role of the "specific intellectual" which he opposes to the "universal intellectual" (Foucault 1980). As noted above though, this form of specific intellectual can fall into the traps of disciplinarity and professionalization which over time tends to winnow out and suppress critique and critical movements. Much of our disciplinary methods are imperialistic, attempting to build empires of belief and proof within their frameworks (Daston 2004). Whether the disciplinarity is based in sociological understandings of the internet, communication studies, information studies or otherwise, critical internet studies as an interdisciplinary endeavor, much like internet studies tends to resist imperialistic disciplinarity.

There are other universalizing tendencies in internet studies. One is that there should be only one technical culture or one internet-culture, when in fact there are likely more cultures on the internet than cultures off the internet. This axiomatic universalization along with others forms of generalization is what allows positivists to assume internet behavior for 60 undergraduate students from relatively well-off backgrounds can be generalized statistically to other populations. Critical internet studies researchers do use statistics; in fact, they will use whatever methods are necessary to convey the argument, but they must resist some of the tendencies and assumptions around the idea that everyone experiences the internet relatively the same way. We know all people do not experience everyday life in the same way. Human experience in our everyday life is profoundly influenced by any number of prior experiences and contexts in a way making it so one person's experience of technology might not be shared in any meaningful way, though other shared experiences, for life must be. Our tendency to speak of "the internet" as a universal thing is a *fictum*, a fictional world framing our actual behavior, much like being at

Pennsic frames the day-to-day lives of members of the Society for Creative Anachronism. The belief in the universal user experience has long been debated in human-computer interaction and the design field, and from a critical frame, we should resist it and realize the intersectional relations constructing groups who possess vastly similar and communicative experiences; those groups' experiences might not be commensurate or be able to be clearly communicated to a member of another group. In short, as critical scholars, while we might persist in the *fictum* of a universal machine or a universal language, or unified mass audiences, we should also realize this *fictum* is merely a tool to get beyond itself. We should push toward the broader construction of the understanding of the profound pluralism of the internet. In the pluralism of human experiences is where we might generate the most critical possibility and the most hope.

Critical internet researchers are bound in a mess of commodifications and sub-national interests. They cannot help but recognize the internet and its operation is both dependent and independent on the current world order, but they must also realize this is changing and the internet is changing with it. Any scholar looking at how an online game works must consider at some point, even if later dismissed as not necessary, who owns the information, and how information is transferred, at what speed, etc. The basic operations of the arbitrage of systems and ownership of connections, transfers, etc. have made issues like network neutrality important and then again perhaps not crucial as things are changed to operate differently than before. The context of critical internet research is the context of choice of awareness and choice of positions. If in every paper we had to explain the underlying problems of information transfer, we would make no progress, even though the fundamental problems of internet infrastructure are related to most of the problems we face in other parts of the internet. In 1996, the cunning commodification of the internet occurred and transformed the internet ecology into what it is becoming today. The neoliberal world thinks of the internet primarily in commercial terms, even if some companies do everything in their power to hide their commercial operations in favor of other processes. This commerciality and commodification have transformed the labors of production and consumption and their productivities and consummativities. Even noncommensurate values like privacy are now commodified, consumed, and traded. The mode of labor involved also varies. Affective and intellectual labor are predominant in critical internet research, but manual labor is also present. There is also a reflexive challenge here to recognize that these modes of labor, production, and consumption are not merely present in the object of study, but also central to our everyday lives, and our research lives. Our very places of employment and modes of employment are part of an increasingly neoliberalized market, which puts stresses on us, but also on our relation to students and the young researchers we mentor. We must realize that the intellectual and affective labor of internet research itself has become commoditized and the commodity, much like it is on Facebook and in other modes of platform capitalism, is us and the people that will replace us.

These responsibilities of critical internet research are all ones we should recognize. Just as we should recognize and value the diversity and plurality of our

everyday lives on and off the internet. Critical internet studies has a few more responsibilities than internet studies by nature of it being critical, but its criticality does not encumber it but empowers it to move forward.

The Foundations Are Courage and Responsibility

The foundation of critical internet studies is courage. Courage to fight intellectually for a sustainable future, for an internet that is part of that future. Courage to sense, feel, and know the world, the ethos, and the ethico-politico-aesthetic constructions of ourselves and our relations. The courage to think beyond the authoritarian nature of our everyday lives in schools, business, commodity-relations, labor-relations, and elsewhere, to perhaps be democratic, free, and equal to our shared hopes the courage to recognize and value the plurality of possibilities arising from any event or relation. Finally, it is the courage to be wrong, to fail, but to try again.

We are frequently wrong, but also must be responsible for our wrongs, both individually and collectively. We are responsible to bring about change, but we are also responsible for the changes we fail to bring. Critical internet studies is not the sole group responsible for the internet, but it is one of many groups putting forth criticism and advocating for changes. This responsibility for the internet and our world is part of the critical capabilities necessary for critical research. It is not a universal responsibility for anything or everything, but as we engage as specific intellectuals in our fields of research, we must be responsible to ourselves and the world, its inhabitants, and their ecologies. Not even then can we be fully responsible for anything other than our specific efforts, but we must be accountable for those, because if we alienate our critical efforts, then we alienate our hope.

In much of this essay, hope has played a significant part, because hope is part of our distributed and hopefully communicated subjectivity. Hope is a process through which we become better participants in the world by trying to reconstruct the world made possible through our hopes. Hope is a cognitive state, but if communicated can be shared, and can be deeply motivating. Have the courage to hope for a better internet and let us use critical internet studies for that purpose.

References

- Abrams MH, Fischer M (1991) Doing things with texts: essays in criticism and critical theory. Norton, New York
- Beck U, Giddens A, Lash S (1995) Reflexive modernization: politics, tradition and aesthetics in the modern social order. Stanford University Press, Stanford
- Benhabib S (1981) Modernity and the aporias of critical theory. *Telos* 1981(49):39–59. <https://doi.org/10.3817/0981049039>
- Benhabib S (1986) Critique, norm, and utopia: a study of the foundations of critical theory. Columbia University Press, New York
- Boltanski L, Thévenot L (1999) The sociology of critical capacity. *Eur J Soc Theory* 2(3):359–377. <https://doi.org/10.1177/136843199002003010>

- Bourdieu P (1992) *The logic of practice*. Stanford University Press, Stanford
- Bourdieu P (2004) *Science of science and reflexivity*. University of Chicago Press, Chicago
- Bourdieu P, Passeron JC (1990) *Reproduction in education, society and culture (theory, culture and society series)*. Sage, London
- Butler J (2009) Critique, dissent, disciplinarity. *Crit Inq* 35(4):773–795. <https://doi.org/10.1086/599590>
- Connolly WE (1993) *The terms of political discourse*. Princeton University Press, Princeton
- Consalvo M, Ess C (2011) *The handbook of internet studies*, vol 14. Wiley, Malden
- Daston L (2004) Whither critical inquiry? *Crit Inq* 30(2):361–364
- Deleuze G, Guattari F (1988) *A thousand plateaus: capitalism and schizophrenia*. Continuum, London
- Dutton WH (2013) *The Oxford handbook of internet studies*. Oxford University Press, Oxford
- Foucault M (1980) *Power/knowledge: selected interviews and other writings, 1972–1977*. New York, Pantheon Books
- Fuchs C (2011) *Foundations of critical media and information studies*. Londone, Routledge. <https://doi.org/10.4324/9780203830844>
- Gallie W (1956) Essentially contested concepts. *Proc Aristot Soc* 56(2):187–198
- Gieryn TF (1983) Boundary-work and the demarcation of science from non-science: Strains and interests in professional ideologies of scientists. *Am Sociol Rev* 48(6):781–795
- Guattari F (1984) *Molecular revolution: psychiatry and politics (peregrines)*. Penguin, Harmondsworth
- Guattari F (1995) *Chaosmosis: an ethicoaesthetic paradigm*. Bloomington Indiana, Indiana University Press
- Guattari F (1996) *Soft subversions*. Semiotext(e), New York
- Horkheimer M (1982) Traditional and critical theory. In: *Critical theory: selected essays*. Continuum Pub. Corp, New York, pp 188–243
- Horkheimer M (2012) *Critique of instrumental reason* (trans: O'Connell MJ). Verso, London/New York
- Horkheimer M (2013) *Eclipse of reason*. Bloomsbury, London/New York
- Horkheimer M, Adorno TW (2002) *Dialectic of enlightenment: philosophical fragments* (trans: Jephcott E). Stanford, Stanford University Press
- Hunsinger J (2005) Reflexivity in e-science: virtual communities and research institutions. *ACM Siggroup Bull* 25(2):38–42
- Hunsinger J (2009) Introducing learning infrastructures: invisibility, context, and governance. *Learn Inq* 3(3):111–114
- Hunsinger J, Klastrup L, Allen M (2010) *International handbook of internet research*. Springer, Dordrecht
- Jessop B, Sum N-L (2016) What is critical? *Critl Policy Stud* 10(1):105–109. <https://doi.org/10.1080/19460171.2015.1129352>
- Kofman A (2018, October 25). Bruno Latour, the Post-Truth Philosopher, Mounts a Defense of Science. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/10/25/magazine/bruno-latour-post-truth-philosopher-science.html>
- Latour B (2004a) Politics of nature: how to bring the sciences into democracy. (trans: Porter C). Harvard University Press, Cambridge
- Latour B (2004b) Why has critique run out of steam? From matters of fact to matters of concern. *Crit Inq* 30(2):225–248. <https://doi.org/10.1086/421123>
- Lazarsfeld PF (1941) Remarks on administrative and critical communications research. *Z Sozialforschung* 9(1):2–16
- Luke TW (2016) What is critical? *Critl Policy Stud* 10(1):113–116. <https://doi.org/10.1080/19460171.2015.1131617>
- Marcuse H (1971) *An essay on Liberation*, 1st edn. Beacon Press, Boston

- Marcuse H (2013) One-dimensional man: studies in the ideology of advanced industrial society. Taylor and Francis, Hoboken. Retrieved from http://www.123library.org/book_details/?id=111060
- Phillips U (1993) Dump the bosses off your back (Intro). Vermont, Philo
- Poster M (2001) What's the matter with the Internet? University of Minnesota Press, Minneapolis
- Smythe DW, Van Dinh T (1983) On critical and administrative research: a new critical analysis. *J Commun* 33(3):117–127. <https://doi.org/10.1111/j.1460-2466.1983.tb02413.x>
- Star SL, Griesemer JR (1989) Institutional ecology, “translations” and boundary objects: amateurs and professionals in Berkeley’s museum of vertebrate zoology, 1907–39. *Soc Stud Sci* 19:387–420
- Wolin R (1987) Critical theory and the dialectic of rationalism. *New German Crit* 41:23. <https://doi.org/10.2307/488274>



Degree Programs in Internet Studies or Internet Research

16

Jeremy Hunsinger

Abstract

This appendix extends and updates the listing found in the first volume of the *International Handbook of Internet Research*. The only submissions included are from those people who submitted material. The editors may have chosen to exclude material that did not fit the call.

Keywords

Internet studies · Internet research · Degree programs

Program Name: Games and Emerging Media

Address:

Marist College

Website:

<https://www.marist.edu/communication-arts/film-tv-games-media/games-media>

Program description:

The Bachelor of Science (B.S.) in Games and Emerging Media provides all majors with a foundation in programming, art, game design, UI/UX, game writing/storytelling, and the business of games. In addition, students have the opportunity to take courses in the ethics of games, online culture, storytelling across media, artificial intelligence, and other relevant topics. Students also participate in a game studio course, which is set up like a mock game studio. Students are also required to

In the first volume, we published a list of degree programs in Internet studies and Internet research. That list covers the majority of the programs available, and this list extends and updates some of the entries on that list. The organization of this list is bachelors degrees only, masters degrees only, and then multiple degrees including doctoral degrees.

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

e-mail: jhunsinger@wlu.ca

take a capstone course, which helps them establish a portfolio of games and media work. Students in the program have the opportunity to concentrate in either Technical Development and Programming or Design, Writing, and Culture. The Technical Development and Programming students focus on the programming and software development side of game creation, while the Design, Writing, and Culture students take a customized mix of courses in writing, game design, and social aspects of gaming, depending on one's interests. The core faculty of the Games and Emerging Media Program is drawn from the Computing Technology Department in the School of Computer Science and Mathematics, as well as from the Media Arts Department in the School of Communication and the Arts.

Degrees offered:

Bachelors

Faculty members: Karen Schrier, Ron Coleman, Matthew Johnson

Program Name: Media Studies and Production/Interactive Media concentration

Address:

Marist College

Website:

<https://www.marist.edu/communication-arts/film-tv-games-media/media-studies>

Program description:

The Interactive Media and Game Design concentration prepares students to analyze, design, and create content for those technologies shaping commerce and culture in the twenty-first century. Students learn the latest tools and trends in the interactive media and game industries, as well as creating social networking sites and designing mobile applications and games.

Degrees offered:

Bachelors

Faculty members: See website

Program Name: BA (Hons) Digital Media and Society

Address:

Department of Sociological Studies

University of Sheffield

Website:

<https://www.sheffield.ac.uk/socstudies/sociology/courses/digitalmediasociety>

Program description:

How do apps, platforms, and devices change our social world?

What happens to the information we share on social media?

What does the “selfie” explosion tell us about identity and representation? These are some of the issues that you will address on the BA Digital Media and Society at the University of Sheffield. The BA is unique in offering you the opportunity to develop a broad understanding of the relationship between digital media and society. You will also learn how to make digital media products (such as websites and animations) that focus on the needs of the user and to use innovative digital methods

to research digital media in society. You will study the human consequences of digital media developments, the ways in which social factors shape these developments and the various domains in which digital media are developed, used, and have an impact. The BA Digital Media and Society is based within the Department of Sociological Studies, but it brings together modules from other departments in the Faculty of Social Sciences, such as the Information School. It offers you the opportunity to study digital media developments in relation to a range of fields, like education, marketing, or journalism.

Degrees offered:

Bachelors

Faculty members: See website

Program Name: Integrated Digital Media

Tandon School of Engineering

New York University

Address:

MAGNET

8th Floor

2 MetroTech Center

Brooklyn

NY 11201

Website:

<http://idm.engineering.nyu.edu/>

Program description:

The Integrated Digital Media (IDM) Program fosters creative practice, design research, and multidisciplinary experimentation with emerging media technologies. Located within Tandon School of Engineering, in the Department of Technology, Culture, and Society (TCS), IDM is a “STEAM” program combining artistic inquiry with scientific research and technological practice to explore the social, cultural, and ethical potentials of emerging technologies. We focus on how to create new experiences with technologies but also on what is worth making and why. IDM offers a 4 year BS degree, a MS degree, a cross-school minor available to all NYU students, and an accelerated 5 year BS/MS. The IDM curriculum integrates topics typically found in an arts context – creative expression and design within both fixed and interactive media – with engineering topics such as signal processing and human-computer interaction. This curriculum embraces the intersection of engineering and society, encouraging students to engage with technology in a creative, critical, sustainable, and ethical manner; IDM courses feature strong emphasis on human-centered, outward-facing work that integrates values of self-expression, equity, and social justice into engineering. In our academic programs, digital media is explored as a spectrum of practices that range from computer programming (for app development, software engineering, game development and interaction design) to 2D and 3D graphics (for human-computer interfaces, augmented reality, motion capture, and game design and development) to photography, film, and audio (for media installations, performing arts research, and integration with various mediums).

Degrees offered:

Bachelors

Masters

Faculty members: Tega Brain, Luke DuBois, Scott Fitzgerald, Elizabeth Henaff, Dana Karwas, Benedetta Piantella, Mark Skwarek

Program Name: Strategic media development

Address:

Malmö University

Website:

<https://edu.mau.se/en/Program/TAMEb>

Program description:

Media technology focuses on the development and management of current and emerging digital media technologies in relation to relevant social, economic, and cultural contexts. This master's program works closely with the business sector and provides you competences that are highly sought-after in the media industry. You will get the opportunity to focus on, and deepen your knowledge of, different aspects of computational media development.

Combining competences from a wide range of relevant fields including: Internet of things; digital humanities; data analysis; netnography; and more, this program offers a unique interdisciplinary focus.

Degrees offered:

Masters

Faculty members: See website

Program Name: BA Online Culture: Art, Media, and Society

Address:

Tilburg University

Department of Culture Studies

PO Box 90153

5000 LE Tilburg

Netherlands

Website:

<https://www.tilburguniversity.edu/education/bachelors-programs/online-culture-art-media-and-society/>

Program description:

The twentieth century offline world of cultural production and circulation has been complemented in the twenty-first century by an online world. This new infrastructure has profoundly changed the modes of interaction in societies worldwide, creating an altogether new and continually changing panorama of cultural production and circulation.

Key words of the BA Online Culture expressing the core of this innovative curriculum that started in the academic year 2015–2016 are: globalization, digitalization, multimodality, complexity, diversity, speed and acceleration, transformations

of the public sphere, new forms of social action and cultural production, new forms of identity construction and group formation. Our approach of doing culture studies demands a critical reflection on familiar concepts and methods in culture studies. New social and cultural phenomena call for new kinds of analysis. In this curriculum, therefore, existing analytical and theoretical frameworks are continuously subject to critical reflection and wherever necessary revision.

In this program, students will learn to understand and interpret how digitalization and globalization influence our everyday lives, the artistic expressions we enjoy, and the ways in which we communicate. Examples of some current topics are: social media protest as a form of political participation, online fan fiction as a form of literature, memes as a form of communication, the authenticity of religion and ritual online, commemorations of atrocities through online and offline cultural practices

Degrees offered:

Bachelors

Faculty members: See website

Program Name: New Media and Digital Culture

Address:

University of Amsterdam

Turfdraagsterpad 9

1012 XT

Amsterdam

the Netherlands

Website:

<https://www.uva.nl/m-programmas/gsh/masters/new-media-and-digital-culture-media-studies/new-media-and-digital-culture.html>

Program description:

The Master's program in New Media and Digital Culture offers a comprehensive and critical approach to new media research, practices, and theory. It is an internationally renowned program in critical media theory, dedicated to the study of the social transformations brought about by digital culture. The program offers you in-depth training in the latest digital research methods and the opportunity to participate in data sprints and to collaborate with international researchers. It is situated within a pioneering new media cultural scene in Amsterdam and an academic environment ranked among the top six universities worldwide (QS World University Rankings by Subject 2017: Communication & Media Studies).

Degrees offered:

Bachelors

Masters

Faculty members: Esther Weltevreden, Niels van Doorn, Alex Gekker, Anne Helmond, Stefania Milan, Thomas Poell, Bernhard Rieder, Richard Rogers, Natalia Sánchez Querubín, Jan Simons, Michael Stevenson, Marc Tuters, Lonneke van der Velden

Program Name: Social Technologies

Address:

New College
Arizona State University – West campus
P.O. Box 37100
Phoenix
AZ 85069–7100

Website:

<https://newcollege.asu.edu/social-technologies-ma>

Program description:

Social Technologies at ASU focuses on understanding the ways in which algorithmic society are changing the ways in which power is exercised socially and culturally. Our research recognizes that information and computer technologies are far from a neutral media and make durable – sometimes in invisible ways – the power relationships in society.

Degrees offered:

Masters

Faculty members: Alexander Halavais, Jeffrey Kassing, Hazel Kwon, Lindsey Meân, Majia Nadesan, Suzanne Vaughan, Vince Waldron, Shawn Walker, Jacqueline Wernimont, J. Macgregor Wise

Program Name: Master of English and New Media Studies (MENMS)

Address:

School of Language and Culture
Auckland University of Technology (AUT)
Private Bag 92006
Auckland 1142
New Zealand

Website:

<https://www.aut.ac.nz/menms>

Program description:

The Master of English and New Media Studies examines the nexus between new media and spoken, written or visual communication in English. Core papers focus on new media performance and practice, game narrative and interactive storytelling, language and virtual worlds, English and new media research methods, and the discourse analysis of new media. The Master of English and New Media Studies consists of one semester of taught papers, followed by a two-semester supervised thesis of an experimental, theoretical, creative, or practice-based nature.

Degrees offered:

Masters

Faculty members: Darryl Hocking, Philippa Smith, Tof Eklund

Program Name: Digital Management

Address:

University of Applied Sciences

Jaegerstrasse 32

10117 Berlin

Germany

Website:

<https://www.hs-fresenius.de/en/economics-media/studies/all-study-programs/master/digital-management-ma-8/berlin/>

Program description:

Advancing digital transformation is changing entire sectors and industries. Companies and organizations must face these increasing challenges in the future, too, and learn to understand these radical changes and deal with their outcomes. The new Master's program in Digital Management teaches students about both traditional management approaches and new digital management methods. The new consecutive and application-focused program builds on the content of Bachelor's programs in business administration and media studies and delves more deeply into the knowledge that students have already acquired. This program is heavily influenced by the Internet Sociology Department Research and Teaching Strategy.

Degrees offered:

Masters

Faculty members: See website

Program Name: Communication, Culture, and Technology

Address:

3520 Prospect St NW Suite 311

Washington, DC

USA

Website:

<https://cct.georgetown.edu/>

Program description:

CCT focuses on interdisciplinary questions surrounding relationships between communication, culture, and technology.

Masters

Faculty members: Evan Barba, Leticia Bode, Martin Irvine, Meg Jones, Michael Koliska, David Lightfoot, Michael Macovski, JR Osborn, Diana Owen, Matthew Tinkcom, Jeanine Turner

Program Name: MSc in Digital Society

Address:

6.23 Chrystal Macmillan Building

George Square

University of Edinburgh, Edinburgh, UK EH8 9LD

Website:

http://www.sps.ed.ac.uk/gradschool/prospective/taught_masters/a_g/msc_in_digital_society

Program description:

Our MSc will offer you the opportunity to study with top scholars and to develop specialist expertise in digital culture, the digital economy and the sociology of finance, and emerging digital research methods. The program will provide you with the theoretical and methodological skills required to address issues such as big data, algorithmic society, the future of privacy, cybercrime, and the future of work and labor. The MSc in Digital Society is intended for any student who wants to understand, as well as learn to study, analyze, and critique digital technologies and the complex ways in which they shape society, social institutions, and culture.

Degrees offered:

Masters

Faculty members: Karen Gregory, Kate Orton-Johnson, Nick Prior, Angus Bancroft, Tod Van Gunten, Nathan Coombs

Program Name: MA in Social Media Communications

Address:

School of Communications

Dublin City University

Collins Avenue Ext.

Glasnevin, Dublin

Ireland

Website:

<https://www.dcu.ie/courses/Postgraduate/communications/MA-Social-Media-Communications.shtml>

Program description:

The MA in Social Media Communications offers a critical examination of the history, operation, ramifications, functions, use, and embeddedness of social media in all spheres of life. It is aimed at people who look for a critical reflection on social media, who wish to understand their uses, and also learn how to analyze and mobilize them strategically. The emphasis of the course is on a social scientific understanding and analysis of the emergence and functions of social media in a globalized networked society. The course addresses the way in which social media became involved in and change personal lives, habits and identities, social lives, the way in which we relate to and coexist with other people; the way in which we work and live our everyday lives; and life, which changes as a result of the ongoing engagement with social media by politicians, journalists, and publics.

Degrees offered:

Masters

Graduate Certificate

Faculty members: Eugenia Siapera, Tanya Lokot, Brenda McNally, Aileen O'Driscoll, Debbie Ging

Program Name: Digital Technologies and Policy MPA

Address:

of Science

Technology

Engineering and Public Policy (STEaPP) University College London Boston House

36–38 Fitzroy Square

London

W1T 6EY

UK

Website:

<https://www.ucl.ac.uk/steapp/study/masters/2018-19/digital-technologies-and-policy>

Program description:

This MPA degree prepares future leaders and decision makers working in policy to meet the challenges and opportunities presented by today's fast-evolving digital technologies. As the world is changing rapidly, an understanding of the ways that digital technologies impact the global economy, national security, healthcare, employment, and human rights is an essential skill for the next decade. This exciting new multidisciplinary program is the first of its kind, and we will accept our inaugural cohort of students for a start in September 2018. This program is linked to the Digital Policy Laboratory in STEaPP and draws on the expertise of this dynamic and diverse group of world-leading researchers.

Degrees offered:

Masters

Faculty members: Madeline Carr, Irina Brass, Leonie Maria Tanczer

Program Name: MA Digital Media

Address:

of Media and Communications

Goldsmiths

University of London

New Cross

London SE14 6NW

UK

Website:

<https://www.gold.ac.uk/pg/ma-digital-media-technology-cultural-form/>

Program description:

The MA in Digital Media is unique in its combination of practical and theoretical approaches to contemporary media and technology. This established and exciting degree is designed to help students understand digital transformations in media, culture, and society and apply this understanding in practice, in the media and creative industries, and in further research. Students will be equipped with skills that can be applied to current and future developments in digital media, social media, the Internet, computing, and other aspects of networked technology. The MA in Digital Media educates aspiring media practitioners and academics as well as early and mid-career professionals who seek to reflect on their roles in a structured and stimulating learning environment designed to give all students up-to-the-minute

knowledge of digital media and the skills to apply that knowledge to future developments. The MA offers two pathways:

- Pathway 1 is a theory program where students learn about developments in digital media and technology from a wide range of perspectives.
- Pathway 2 is a theory and practice program where students can explore transformations in media, culture, and society through the practice of contemporary digital communication. They will work with one or more of the following to create installations, apps, and single- and multiscreen work that is responsive to the continually changing digital landscape:
 - Animation
 - Photography
 - Video and other forms of moving image
 - Software and web design
 - Hybrid forms of image making

Degrees offered:

Masters

Faculty members: Professor Joanna Zylinska, Dr Daniel Rourke, Ms Alice Dunseath

Program Name: New Media Communications

Address:

Snell Hall
Oregon State University
Corvallis
OR 97331
USA

Website:

<https://liberalarts.oregonstate.edu/school-arts-and-communication/new-media-communications>

Program description:

Oregon State's undergraduate program in New Media Communications emphasizes data visualization, animation, media law, media entrepreneurship, and media and society. Students develop competencies in media production and critical media studies.

Degrees offered:

Bachelors

Faculty members: Julia Bradshaw, Daniel Faltesek, Finn John, Nicole Holck, Todd Kesterson, Bill Loges, Alina Padilla-Miller, Islam Al Musaly, Joshua Reeves, Amanda Tasse, Carmen Tiffany

Program Name: MA Digital Media and Society

Address:

Department of Sociological Studies, University of Sheffield

Elmfield, Northumberland Road, UK

Website:

<https://www.sheffield.ac.uk/socstudies/prospt/ppt/madigitalmediasociety>

Program description:

The MA in Digital Media and Society at the University of Sheffield is unique in offering students an opportunity to develop a broad understanding of the interweaving of digital media and society from a sociological perspective. Drawing upon staff expertise in digital media and digital society, this program will give you grounding in all aspects of digital media, allowing you to specialize in a specific area, or develop your understanding of all of the following:

- Researching digital society
- Digital practices
- Digital methods

The program offers you the opportunity to think about digital media developments in relation to a range of social and cultural issues, such as gender, race, intimacy, surveillance, science, health, advocacy, and the production of news. It covers cultural and sociological theory, traditional qualitative and quantitative methods, and new methodological techniques for digital research like data mining.

Degrees offered:

Masters

Faculty members: Ysabel Gerrard, Helen Kennedy, Warren Pearce, Lukasz Szulk, Stefania Vicari

Program Name: Experimental Publishing Master

Address:

Piet Zwart Institute
Experimental Publishing
WdKA
Hogeschool Rotterdam
Postbus 1272
3000BG
Rotterdam
The Netherlands
Website:

<https://xpub.nl>

Program description:

XPUB focuses on the acts of making things public and creating publics in the age of postdigital networks. From app stores to art book fairs and zine shops, from darknets to sneakernets, from fansubs to on demand services, and from tweeting to whistleblowing, the act of making things public, that is to say publishing, has become pivotal and multimodal in an age infused with myriad media technologies. At the same time, this expansion of means and meanings of what is publishing create a risk that the public in making things public becomes overshadowed by publishing

practices absorbed in novelty workflows and their own techno-aesthetics. This is why by publishing we also mean to create publics, to engage with a broad set of intermingled and collaborative practices, both inherited and to be invented, so as to critically explore and actively engage with issues that are:

- Social, technical, cultural and political
- Involving actors both human and algorithmic
- Mediated by networks of distribution and communication of varying scales and visibility

Degrees offered:

Masters

Faculty members: Clara Balaguer, André Castro, Florian Cramer, Aymeric Mansoux, Michael Murtaugh, Steve Rushton, Marloes de Valk, Amy Wu

Program Name: MA Data, Culture, and Society

Address:

Communication and Media Research Institute

University of Westminster

Watford Road

Harrow

Middlesex HA1 3TP

United Kingdom

Website:

<https://www.westminster.ac.uk/computer-science-and-software-engineering-journalism-and-mass-communication-courses/2019-20/september/full-time/data-culture-and-society-ma>

Program description:

We live in an age where almost everything of what we do is connected to data. Big data and datafication – the increasing transformation of multiple aspects of everyday lives into digital data – pose great opportunities but also risks for contemporary societies. This new MA course addresses, explores, and creatively utilizes this transformation. We place an emphasis on current and future technologies and practices such as algorithms, artificial intelligence, big data, blockchain, data analytics and data mining, the Internet of Things, and others. This multidisciplinary course brings together media/communication studies and computer science. It combines hands-on and applied approaches with theoretical learning and critical analysis. It will encourage collaboration, creative practice, group work, and problem-based learning. You will apply tools and technologies to your own data challenges and projects, including from your existing professional or cultural, political, social, and economic environments.

Degrees offered:

Masters

Graduate Certificate

Faculty members: Jacob Johanssen, Christian Fuchs, Pieter Verdegem, David Chandler, Phil Trwoga, and others

Program Name: Digital Media and Society

Address:

16 Room 330
753 21 Uppsala/Sweden

Website:

<http://www.uu.se/en/admissions/master/selma/program/?pInr=DIMS&pKod=SSV2M>

Program description:

Digital Media and Society, a specialization within the Master Program in Social Sciences, offers students the advanced tools to understand and analyze how media are shaping – and being shaped by – culture, education, politics, and economy and how they interact with every day, professional and social life. The Master's program at Uppsala University prepares individuals to work as communication and digital media professionals and researchers. The goal of the Master Program in Social Sciences, specializing in Digital Media and Society, is to introduce and develop a critical and reflective perspective on the role of digital media in contemporary societies, focusing on their cultural, economic, political, and organizational dimensions and implications.

Degrees offered:

Masters

Faculty members: Göran Svensson, Nico Carpentier, Vaia Doudaki, Anneli Edman, Steve McKeever, Therese Monstad

Program Name: American University School of Communication Doctoral Program

Address:

American University
School of Communication
4400 Massachusetts Avenue NW
Washington, DC 20016
USA

Website:

<https://american.edu/soc/communication-studies/PhD/index.cfm>

Program description:

The AU School of Communication's Doctor of Philosophy in Communication allows you to focus on the intersection of media, technology, and democracy. Our program is designed for scholars who seek to understand how communication and technology interact with democratic life and participation in an open society, with a particular emphasis on the role of new media in civil society – a theme consistent with the core public service mission of American University. Our interdisciplinary course of study is solidly rooted in contemporary communications knowledge,

theory, research methods, and principles, while drawing from the diverse intellectual resources across American University. The program offers both humanistic and social scientific approaches to the study of communication, tapping into our relationships with NGOs, media companies, foundations, and government institutions throughout the Washington metro area. In our doctoral program, you will produce scholarship, using both quantitative and qualitative approaches, that has real-world connection and impact. You will organize your studies around your choice of a thematic concentration. Courses covering a wide spectrum of issues will allow you to explore the cultural, technological, economic, and policy forces shaping the media system. The accelerated structure of our program offers an 11-month-per-year mentoring and learning environment, enabling you to complete your degree in 3 years. Our graduates are qualified for tenure-track faculty positions at institutions of higher education in communication, media studies, public relations, journalism, film and media arts, and related fields. You will also have the advanced qualifications for professional work in public policy, research, communication, marketing, and production at media, nonprofit, advocacy, government, and industry organizations. The School of Communication's PhD in Communication advances theory, develops knowledge, and enhances the ability of our institutions, social groups, and professionals to apply that knowledge to address our most pressing political and social challenges today. If you want to be a part of the next generation of communication scholars, professors, leaders, and practitioners for the digital age, this is an ideal program for you.

Degrees offered:

Doctorate

Faculty members: Patricia Aufderheide, W. Joseph Campbell, Derrick Cogburn, Laura DeNardis, Ericka Menchen-Trevino, Saif Shahin, Aram Sinnreich, Benjamin Stokes, Margot Susca, Filippo Trevisan, John Watson, Sherri Williams, Rhonda Zaharna

Program Name: Digital Culture

Address:

University of Bergen

PB 7820

5020 Bergen

Norway

Website:

<https://www.uib.no/en/discipline/digitalculture>

Program description:

Digital culture is the study of social, cultural, ethical, and aesthetic aspects of information- and communication technology (ICT). Our main focus area lies within digital art and culture and the interaction between culture and technology. Studying Digital Culture will enable you to critically reflect on tech culture and the history of technology in addition to giving you hands on experience in webdesign and creative web projects. You will learn about aesthetic modes of expression in digital media,

such as electronic literature, digital arts, and computer games. Almost all our BA courses, and all of our MA courses are taught in English, and we welcome exchange students and international students.

Degrees offered:

Bachelors

Masters

Doctorate

Faculty members: Jill Walker Rettberg, Scott Rettberg, Daniel Jung, Daniel Apollon, Rolf Beev

Program Name: Information and Knowledge Society Doctoral Programme

Address:

B3

Parc Mediterrani de la Tecnologia

Av. Carl Friedrich Gauss

5

Website:

<http://studies.uoc.edu/en/doctoral-programmes/information-knowledge-society/presentationInformation and communication technologies>

Program description:

ICTs, touted since the mid-twentieth century and constantly being updated, have gradually crept into all areas of human activity: culture, the economy, teaching, media, business management, public service management, and even the operational aspects of the political system. Analyzing how these technologies are used in various contexts and the profound changes they have wrought is key to understanding contemporary society and to exercising any type of professional or academic activity. The connections between various social, economic, political, and cultural systems make it necessary to overcome traditional disciplinary boundaries in order to conduct serious, in-depth analyses. This doctoral program thus takes an interdisciplinary approach that combines both a variety of theoretical perspectives and several methodological tools. Specifically, the Doctoral Programme in the Information and Knowledge Society defines this interdisciplinary approach based on the relationship between the doctoral program and the research conducted at the University in the various areas and topics the program covers. The Doctoral Programme in the Information and Knowledge Society consists of an organized series of training and research activities leading to the award of a doctoral degree. The organized research period of the doctoral program comprises courses, seminars, and training activities designed to provide advanced training in research. It culminates with the completion, through the preparation and presentation of a doctoral thesis, of an original research initiative that contributes to the accumulated knowledge on an aspect or topic related to the information and knowledge society.

Degrees offered:

Doctorate

Faculty members: See Website

Program Name: Joint International Doctoral (Ph.D.) Degree in Law, Science, and Technology (LAST-JD)

Address:

CIRSFID, University of Bologna
VIA GALLIERA, 3 IT – 40121 BOLOGNA

Italy

Website:

<http://www.last-jd.eu/>

Program description:

The Joint International Doctoral Degree in Law, Science and Technology is an interdisciplinary integrated doctorate, designed to address new challenges in legal, socio-ethical, and technical domains arising from the information society and newly emerging technologies.

Degrees offered:

Doctorate

Faculty members: See website

Program Name: Post-Graduate Program in Information Science

Address:

Lauro Muller
455 - 4th floor - Botafogo - Rio de Janeiro/RJ - CEP 22290 - 160 - Brazil
Website:

<http://www.ppgci.ufrj.br/introduction/>

Program description:

The Program offers Masters and Doctorate courses in Information Science, aiming at the academic qualification in research and development of high-level professionals committed to the advancement of knowledge in this field. PPGCI is developed in an association between the Brazilian Institute of Information in Science and Technology (Instituto Brasileiro de Informação em Ciência e Tecnologia – IBICT) and the School of Communication (Escola de Comunicação – ECO) of the Federal University of Rio de Janeiro (Universidade Federal do Rio de Janeiro – UFRJ). The Program dates back to 1955 when the Course of Scientific Documentation (Curso de Documentação Científica – CDC) was created by IBICT. The Concentration Area is Information and Social and Technological Mediations for Knowledge. Lines of Research: Line 1 – Communication, Organization, and Management of Information and Knowledge; Line 2 – Sociocultural, political, and economic configurations of information.

Degrees offered:

Masters

Doctorate

Faculty members: See Website

Program Name: Media and Communications

Address:

City College, University of London

Northampton Sq. London

UK

Website:

<https://www.city.ac.uk/courses/postgraduate/media-and-communications>

Program description:

This course has been developed for those who wish to extend, deepen, update, and sharpen their knowledge and understand current developments in media and communications. It will also provide you with the confidence to undertake further studies related to your academic practice and support you disseminating this work.

Degrees offered:

Bachelors

Masters

Graduate Certificate

Doctorate

Faculty members: See website

Program Name: Communication and Internet Studies

Address:

94

3040

Limassol

Cyprus

Website:

<https://www.cut.ac.cy/faculties/comm/cis/?languageId=1>

Program description:

The Department of Communication and Internet Studies (CIS) is one of the first of its kind in Europe and reflects the need for an interdisciplinary approach for studying the Internet and its impact on human relations, communication, and the knowledge society. In the CIS Department, we consider communication technologies as a crucial element in human development and we believe that a comprehensive understanding of the Internet and its effects requires an approach that moves beyond the Internet's technological features and takes into consideration the socio-political and psychological aspects of online communication. For this reason, CIS academic staff comes from diverse areas of specialization such as Media Studies (press, radio, cinema, and television), Learning Sciences, Computer Science (including Information Retrieval, Content Creation and Networked Multimedia Communications), Sociology, Cultural Studies, Social Psychology, Political Science and Journalism. The Department's long-term vision involves promoting the study of new communication technologies' interaction with social activity and its effects on politics, economy, education, and culture, to the point that Internet Studies is upgraded to an autonomous discipline. Thus, CIS promotes an interdisciplinary approach on its curriculum and research orientation focusing on the relationship between new communication technologies and societal activity at local, European and international level. The Department offers a BA in Communication and Internet Studies, an MA in Digital Media and Journalism, and an MA in New Technologies for

Communication and Learning. Its Doctoral Program of Study is carefully structured and aims at delivering integrated and excellent education at the doctoral level.

Degrees offered:

Bachelors

Masters

Doctorate

Faculty members: See website

Program Name: Master of Social Informatics

Address:

University of Ljubljana

Faculty of Social Sciences

Kardeljeva ploscad 5

1000 Ljubljana

Slovenia

Website:

<https://www.fdv.uni-lj.si/en/study/study-at-the-FDV/masters-programmes/study-programmes/master-of-social-informatics-2nd-cycle>

Program description:

Integration of social sciences, methodology of research and computer sciences is becoming a necessity and an important competitive advantage in contemporary data-driven information society. The transdisciplinary master's study program of social informatics with more than 30 years long tradition brings together social and computer sciences for two reasons: firstly, to promote uses of various information-communication technologies (ICTs) in social science research and secondly, to analyze social aspects of design, implementation and uses of new technologies, especially the Internet and mobile phones. Syllabus can be tailored for a more specialized training for specific career profiles, such as data analyst, research expert (in media, marketing, at institutes, in the academic sector, etc.), Internet content developer, or specialist dealing with social aspects of developing and evaluating web services and products.

Degrees offered:

Bachelors

Masters

Doctorate

Bachelor is only in Slovene language

Faculty members: See website

Program Name: Communication, Rhetoric, and Digital Media

Address:

North Carolina State University

Humanities and Social Sciences

Communication, Rhetoric and Digital Media

Caldwell Hall 106F

Campus Box 8101

Raleigh, NC 27695

USA

Website:

<https://crdm.chass.ncsu.edu>

Program description:

The Ph.D. Program in Communication, Rhetoric, and Digital Media prepares doctoral students to analyze the social, cultural, rhetorical, philosophical, and political dimensions of information technologies new communication media, and digital texts and to actively engage digital media through research, criticism, production, and practice. Students work with program faculty from the departments of Communication and English and with affiliated faculty from departments across the university to study oral, written, visual, computational, and multimodal forms of communication and rhetoric and digital media; to examine the transformation of communication in the context of converging digital media and communication networks; and to address the theoretical challenges of innovative, interdisciplinary research. Faculty guide students in this work by using a broad range of social scientific and humanistic methods in which they specialize. The program offers comprehensive mentoring for professional development diverse opportunities for teaching experience and research assistantships associated with grant-funded faculty projects. CCRM faculty and students collaborate with colleagues in science and technology fields across the university and the Research Triangle. Our graduates have been very successful finding employment in a variety of positions in academia (both at research-intensive universities and at teaching-oriented liberal arts colleges), government, and corporate organizations where there is a growing demand for the interdisciplinary skill sets developed in CCRM.

Degrees offered:

Doctorate

Faculty members: See website

Program Name: Learning, Design, and Technology

Address:

301 Keller

Penn State University

University Park, PA 16803

Website:

<https://ed.psu.edu/lps/ltd>

Program description:

This program provides advanced professional preparation in the development or assessment of effective instructional materials and the use or evaluation of technology and media to support learning in a variety of formal and informal educational settings. The program of study applies skill and knowledge from the fields of the learning sciences, instructional design, computer and networked technologies, human computer interaction, media studies, and research methodologies to study educational designs and their effect on learning. Graduates are employed as instructional designers by corporate, agency, and military training departments;

entrepreneurial consulting companies; public school districts; museums, nature centers, and other informal learning settings; community college learning resource centers; and colleges and universities.

Degrees offered:

Masters

Graduate Certificate

Doctorate

Faculty members: Gabriela T. Richard, Marcela Borge, Roy Clariana, Ty Hollett, Simon Hooper, ChanMin Kim, Joshua Kirby, Susan Land, Priya Sharma, Tanner Vea, Heather Toomey Zimmerman

Program Name: Internet Project and Research

Address:

Louise T Road. Limpopo Province. South Africa

Website:

www.icollegeint.co.za

Program description:

At a time when every major research project involves remote resources – human and otherwise – our program is committed to helping researchers and research managers and students focus on the research itself, rather than the provision of infrastructure. We have access to a unique, nationwide high-performance network infrastructure that removes the boundaries of today's Internet and provides an unsurpassed methodology for research.

The program also is revitalizing research partnership and engagement, creating an integrated network and services architecture for interested individual, and implementing a roadmap that will keep the Internet project research community – the same community who created the Internet – at the focal point of technology innovation and development.

Degrees offered:

Bachelors

Graduate Certificate

Certificate

Faculty members: See website

Program Name: Information

Address:

140 St George St

Toronto

ON M5S 3G6

Canada

Website:

<http://ischool.utoronto.ca/>

Program description:

We are proud to have maintained the internationally recognized American Library Association (ALA) accreditation since 1937, produced the first PhD program in

Information Studies in Canada, established the first iSchool in Canada and the only English-language Master's program in Museum Studies in Canada. The UofT iSchool is part of the consortium of global information schools dedicated to leading and promoting the information field.

Degrees offered:

Bachelors

Masters

Graduate Certificate

Doctorate

Faculty members: Christoph Becker, Chun Wei Choo, Colin Furness, Alan Galey, Sara Grimes, Cara Krmpotich, Seamus Ross, Matt Ratto

Program Name: Certificat en communication socionumérique des organisations

Address:

Université du Québec à Montréal (UQAM, Canada)

Website:

<https://communication-socionumerique.uqam.ca>

Program description:

Our Diploma in digital communication for organizations is aimed at those interested in social media, who seek to use them to their full potential, while keeping a critical eye on their implications. In our 1 year program, student will learn how to design digital communication strategies that are relevant to an organization's specific goals. The program addresses both technical training and the theoretical and ethical reflections underlying the online presence of individuals and organizations. The training acquired makes it possible to intervene in various communication trades and more specifically in social media communication. The program aims to train communication professionals who can lead and organize the conversations a party, collective, brand, or organization has with various audiences on the Internet. Students are trained in media communication issues as well as in communication tools and techniques that will allow them to effectively interact online with the organization's communication policies and strategies.

Degrees offered:

Graduate Certificate

Diploma

Faculty members: See website

Program Name: New Media and Digital Culture

Address:

Media & Culture Studies

Muntstraat 2A

3512 EV Utrecht

Netherlands

Website:

<https://www.uu.nl/masters/en/new-media-digital-culture>

Program description:

During the 1 year Master's program in New Media and Digital Culture at Utrecht University, students inquire the many aspects of what it means to live in an age of new media. Guided by an international team of experienced scholars, students assist with current research projects and learn to reflect critically on how present-day cultures are shaped by social media, data, games, networked communication, Internet activism, apps, data visualizations, mobile devices, algorithms, and participatory platforms. The program explicitly sees new media as present-day manifestations of cultural, social, political, and economic developments that have known similar expressions in different media technologies at different times. This is different from other programs on new media, which often take a highly disciplinary approach taken from literature/film studies or have scrapped all references to other fields of media research. The program pivots around three contemporary features of new media technologies and its relationship to culture and society, namely, the mobile/urban aspect, the ludic/games aspect, and the software/data aspect. While the program highlights the overlaps and synergies between these three aspects, we also offer students the opportunity to specialize in a MA profile which relates to these three aspects. Engaging with such a profile means following a set trajectory of courses and a profile-related internship and thesis. An example of such a profile is Media, Data and Society, a co-partnership with the Utrecht Data School.

Degrees offered:

Masters

Doctorate

Faculty members: Joost Raessens, René Glas, Ingrid Hoofd, Imar de Vries, Michiel de Lange, Mirko Tobias Schäfer, Karin van Es, Stefan Werning, Niels Kerssens, Anne Kustritz, Jasper van Vught



List of Research Centers or Institutes in Internet Studies/Internet Research

17

Jeremy Hunsinger

Contents

Name: Internet Governance Lab	304
Recent Projects or Publications	305
Name: Digital Methods Initiative	305
Recent Projects or Publications	306
Name: Internet Interdisciplinary Institute (IN3)	306
Recent Projects or Publications	307
Name: Internet Sociology Department	311
Recent Projects or Publications	311
Name: ALiGN (Alternative Global Network) Media Lab	312
Recent Projects or Publications	312
Name: Centre for Postdigital Cultures	313
Recent Projects or Publications	314
Name: Imagining the Internet Center	315
Recent Projects or Publications	315
Name: The Cyber Law Program of the Cyber Security Research Center (H-CSRCL)	315
Name: New Political Communication Unit	316
Recent Projects or Publications	316
Name: Centre for Social Informatics	317
Recent Projects or Publications	317
Name: Digital Policy Laboratory	319
Recent Projects or Publications	319
Name: Optus Macquarie University Cyber Security Hub	320
Name: Center for Information Policy Research (UW-Milwaukee)	320
Recent Projects or Publications	321
Name: Laboratory of Computer-Mediated Communication (LabCMO)	321
Recent Projects or Publications	322
Name: Club for internet and society enthusiasts	323
Recent Projects or Publications	323
Name: Nordic Centre for Internet and Society	324
Recent Projects or Publications	324

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

e-mail: jhunsinger@wlu.ca

Name: Center for Internet Studies and Digital Life	325
Recent Projects or Publications	325
Name: Institute for Communication Sciences CNRS/Sorbonne	326
Recent Projects or Publications	326
Name: Institute for Information Policy	327
Recent Projects or Publications	327
Name: QUT Digital Media Research Centre	328
Recent Projects or Publications	329
Name: Infoscape Research Center	329
Recent Projects or Publications	329
Name: Center for Information Technology and Society	329
Recent Projects or Publications	330
Name: Digital Society Network	330
Recent Projects or Publications	331
Name: SIRG: The Stockholm Internet Research Group	331
Recent Projects or Publications	331
Name: NetLab Network	332
Recent Projects or Publications	332
Name: Digital Matters Lab	333
Recent Projects or Publications	333
Name: Utrecht Data School & Datafied Society	334
Recent Projects or Publications	334

Abstract

This expands or updates the list of research centers listed in the International Handbook of Internet Research. The list is compiled by submission, and inclusion is decided by the editors.

Keywords

Research centers · Internet research · Internet studies

This list updates and expands the list published in the first International Handbook of Internet Research. It is ordered by location, usually by the city. The material presented is as it was submitted.

Name: Internet Governance Lab

Address: 4400 Massachusetts Ave., NW, Washington, DC 20016

Website: <https://internetgovernancelab.org/>

Description: The Internet Governance Lab was launched as an interdisciplinary cooperation between American University's School of Communication and School of International Service. Faculty Directors, Dr. Derrick Cogburn, Dr. Laura DeNardis, and Dr. Nanette Levinson, all internationally recognized experts in this field, and their doctoral students draw from disciplines as diverse as engineering,

law, international affairs, and communication to conduct research on how the design and administration of Internet technologies shape public policy across the globe.

The Lab conducts policy-engaged research on digital infrastructure and governance in support of a free and open internet.

Topics: Internet governance, Communication policy, Intellectual property, Technology and society, Science and technology studies, International relations

Leading Members: Dr. Derrick Cogburn, Dr. Laura DeNardis, Dr. Nanette Levinson, Dr. Patricia Aufderheide, Dr. Erran Carmel, Jennifer Daskal, Dr. Nathalie Japkowicz, Dr. Gwanhoo Lee, Dr. Eric J. Novotny, Dr. Aram Sinnreich

Recent Projects or Publications

Cogburn, D. L. (2017). *Transnational Advocacy Networks in the Information Society: Partners Or Pawns?*. Springer.

Musiani, F., Cogburn, D. L., DeNardis, L., & Levinson, N. S. (Eds.). (2016). *The turn to infrastructure in Internet governance*. Springer.

DeNardis, L. (2014). *The global war for internet governance*. Yale University Press.

Nathalie Japkowicz and Yuval Elovici (2018). Special Issue on Data Mining for Cybersecurity. IEEE Computer Society 33.2 (Mar/April 2018)

Laura DeNardis and Mark Raymond (2017). *The Internet of Things as a Global Policy Frontier*. UC Davis Law Review.

Other Affiliated Centers: Center for Media and Social Impact, American University

Name: Digital Methods Initiative

Address: University of Amsterdam, Turfdraagsterpad 9, 1012 XT, Amsterdam, the Netherlands

Website: <https://www.digitalmethods.net/>

Description: The Digital Methods Initiative (DMI) is one of Europe's leading internet studies research groups. Comprised of new media researchers and PhD candidates, it designs methods and tools for repurposing online devices and platforms (such as Twitter, Facebook, and Google) for research into social and political issues. With founding support from the Mondriaan Foundation, DMI has participated in a variety of funded research projects such as MACOSPOL (Mapping Controversies on Science for Politics) and EMAPS (Electronic Maps to Assist Public Science), the EU FP6 and FP7 projects led by Bruno Latour as well as Contropedia in the EU EINS scheme. Most recently, DMI is participating in ODYCCEUS, the H2020 project concerning opinion dynamics and cultural conflict in European spaces. The Digital Methods Initiative, together with the Govcom.org Foundation, has received grants from the Soros Foundation, Open Society Institute, Open Society Foundations, Ford Foundation, MacArthur Foundation, and New Venture Fund and has worked as partners in projects funded by the National Science

Foundation (USA) and the Netherlands Organisation for Scientific Research. Its IssueCrawler software has been supported by nearly 100 universities as well as nongovernmental organizations. Other well-known software tools include the Lippmannian Device, Netvizz (Facebook analysis), and DMI-TCAT (Twitter analysis).

Topics: Digital methods, Social media, Platform studies, Software studies, Issue mapping, Controversy mapping

Leading Members: Richard Rogers, Bernhard Rieder, Anne Helmond, Esther Weltevrede, Erik Borra, Sabine Niederer, Michael Stevenson, Natalia Sanchez Querubin, Emile den Tex, Carolin Gerlitz

Recent Projects or Publications

- Borra, E., & Rieder, B. (2014). Programmed method: developing a toolset for capturing and analyzing tweets. *Aslib Journal of Information Management*, 66(3), 262–278. <https://doi.org/10.1108/AJIM-09-2013-0094>
- Helmond, A. (2015). The Platformization of the Web: Making Web Data Platform Ready. *Social Media + Society*, 1(2), 1–11. <https://doi.org/10.1177/2056305115603080>
- Niederer, S. (2017). The Study of Networked Content: Five Considerations for Digital Research in the Humanities,’ in G. Schiuma & D. Carlucci (eds.), *Big Data in the Arts and Humanities: Theory and Practice*. Boca Raton, FL: CRC Press-Taylor & Francis Group, p. 89–100.
- Rogers, R. (2013). *Digital Methods*. Cambridge: The MIT Press.
- Weltevrede, E., Helmond, A., & Gerlitz, C. (2014). The Politics of Real-time: A Device Perspective on Social Media Platforms and Search Engines. *Theory, Culture & Society*, 31(6), 125–150. <https://doi.org/10.1177/0263276414537318>

Name: Internet Interdisciplinary Institute (IN3)

Address: Internet Interdisciplinary Institute (IN3)
Parc Mediterrani de la Tecnologia (Edifici B3)
Av. Carl Friedrich Gauss, 5
08860 Castelldefels (Barcelona)
Spain

Website: <http://in3.uoc.edu>

Description: The Internet Interdisciplinary Institute (IN3) is a research center of the Universitat Oberta de Catalunya (UOC) specializing in the knowledge society and, more specifically, in the study of the internet and the effects of the interaction between digital technologies and human activity.

The IN3 hosts 10 renowned research groups that carry out a wide range of research of an interdisciplinary nature. Every year the center hosts visiting professors and researchers; its researchers participate in the UOC's doctoral programs.

The Institute is, furthermore, defined by its interdisciplinary research between the social, human, and life sciences, on the one hand, and engineering, on the other. The research groups from these two areas work together closely on the design and development of the internet of the future, taking into consideration both the ICT- and internet-related technological aspects and the effects of these on human activity.

Topics: The IN3 comprises 10 research groups, which focus their activities on matters such as:

- Care and preparedness in the network society
- Information and network security and privacy
- Internet computing and systems optimization
- Gender and ICT
- Complex systems
- Software engineering
- Urban transformations
- Communication networks and social change
- The Internet of Things
- Digital Commons

Leading Members: The group leaders of the IN3 are the following:

- Care and Preparedness in the Network Society (CareNet): Israel Rodríguez Giralt
- Communication Networks and Social Change: Manuel Castells Oliván/Mireia Fernández-Ardèvol
- Complex Systems @ IN3: Javier Borge Holthoefer
- Digital Commons: Mayo Fuster Morell
- Internet Computing and Systems Optimization: Angel Alejandro Juan Perez
- K-riptography and Information Security for Open Networks: David Megías Jiménez
- Gender and ICT: Milagros Sáinz Ibáñez
- Systems, Software and Models (SOM) Research Lab: Jordi Cabot Sagrera
- Urban Transformation and Global Change Laboratory: Ramon Ribera Fumaz
- Wireless Networks: Xavi Vilajosana Guillen

Recent Projects or Publications

Publications

1. Cano Bastidas, C., López-Pérez, D., Claussen, H. & Leith, D.J. (2016). Using LTE in Unlicensed Bands: Potential Benefits and Coexistence Issues. *IEEE Communications Magazine*, 54(12), 116–123. <https://doi.org/10.1109/MCOM.2016.1500413CM>
2. Fàbregues, S., Paré, M.H. & Meneses, J. (2018). Operationalizing and conceptualizing quality in Mixed Methods Research: A multiple case study of the

- disciplines of Education, Nursing, Psychology, and Sociology. Journal of Mixed Methods Research. <https://doi.org/10.1177/1558689817751774>
3. Soria-Comas, J., Domingo Ferrer, J., Sánchez Ruenes, D. & Megías, D. (2017). Individual Differential Privacy: A Utility-Preserving Formulation of Differential Privacy Guarantees. IEEE Transactions on Information Forensics and Security, 12(6), 1418–1429. <https://doi.org/10.1109/TIFS.2017.2663337>
 4. Cánovas Izquierdo, J.L. & Cabot, J. (2016). JSONDiscoverer: Visualizing the schema lurking behind JSON documents. Knowledge-Based Systems, 103(), 52–55. <https://doi.org/10.1016/j.knosys.2016.03.020>
 5. Beneito Montagut, R., Begueria Muñoz, A. & Cassián Yde, Nizaiá (2017). Doing digital team ethnography: being there together and digital social data. Qualitative Research, 17(6), 664–682. <https://doi.org/10.1177/1468794117724500>

Research Projects

1. Title: Single Point Of aTtachment communications empowered by cLoud computing and bIG data analytics running on-top of massively distributed and loosely-coupled Heterogeneous mobile data neTworks
Main researcher: Adelantado Freixer, Ferran

Research Group: Distributed systems, parallel and in collaboration, Wireless Networks

Start date: 01/01/2017

End date: 31/12/2020

Funding entity: European Commission

Call: Call 2016 “Innovative Training Networks (ITN),” Marie Skłodowska-Curie Actions, Priority 1: Excellence Science, H2020

More information: CORDIS (https://cordis.europa.eu/project/rcn/205539_en.html), SPOTLIGHT (<http://gain.di.uoa.gr/spotlight/>)

2. Title: Checking Assumptions aND promoting responsibility In smart Development projects

Objectives: This project will study aspects of the “smart” agenda in which practitioners from the Social and Human Sciences (SSH) offer unique and valuable insights of relevance to innovators and researchers in the ICT – LEIT [1] areas. Centered on topics concerning of users, design, digital rights, and critical infrastructures, CANDID will engage SSH and ICT – LEIT researchers in “extended peer communications” aiming at responsible innovation.

Main researcher: López Gómez, Daniel

Project members: Ribera Fumaz, Ramon; Rodríguez Giralt, Israel

Research Group: Care and Preparedness in the Network Society

Start date: 01/01/2017

End date: 31/12/2017

Funding entity: European Commission

Call: Call 2016 “Information and Communication Technologies (ICT),” Leadership in Enabling and industrial technologies (LEIT), Priority 2: Industrial Leadership, H2020

More information: CORDIS (https://cordis.europa.eu/project/rcn/206367_en.html), CANDID (<https://candid.w.uib.no/>)

3. Title: DDevelop COmpetences in Digital Era

Objectives: DECODE aims at highlighting experiences, practices, and teachers competences activated in schools in digital fields, with the intent to favor the diffusion of best practices and the improvement of media and digital literacy. DECODE intend to experiment a new training model for teachers, which aims at contributing to the creation of digital competences to respond to the new demands of knowledge and information society to education system. This proposal is in line with the most important document and recommendations of European Union policies for and about competences: from the Lisbon Strategy (2000); the New Skills for New Jobs Initiative (2010) to Modernization in Higher Education (2012), which highlights the relevance of digital skills in the knowledge society and the need for states and institutions to overcome the gap with international competitor in digital field. Within Europe 2020, the ESCO initiative (European Skills, Competences and Occupations Framework, 2008) is important for our project because it shows the transversal role of digital competences across the economy. The most common educational aims in strategy documents on digital competence are to improve the integration of ICT in teaching and learning, equip pupils with the necessary ICT skills, provide ICT training for teachers and improve the ICT infrastructure in schools (Education, Audiovisual and Culture Executive Agency, 2011:14).

Main researcher: Guitert Catasús, Montse

Project members: Bruguera Trabal, Carles; Da Palma Santos Jacobetty, Pedro Miguel; Romero Carbonell, Marc; Romeu Fontanillas, Teresa

Research Group: Research Group in Education and ICT

Start date: 01/09/2016

End date: 31/08/2019

Funding entity: European Commission

Call: Call 2016 – Strategic Partnerships in the field of Education, Training and Young, Key Action 2: Cooperation for innovation and the exchange of good, ERASMUS+

More information: CORDIS (https://cordis.europa.eu/project/rcn/206387_en.html), DECODE (<http://decode-net.eu/>)

4. Title: MegaMart2 ECSEL-JU. A scalable model-based framework for continuous development and runtime validation of complex systems

Main researcher: Cabot Sagrera, Jordi

Project members: Clarisó Viladrosa, Robert

Research Group: Systems, Software and Models Research Lab

Start date: 01/04/2017

End date: 31/03/2020

Funding entity: Ministerio de Economía y Competitividad

Call: Acciones de Programación conjunta internacional 2017

More information: CORDIS (https://cordis.europa.eu/project/rcn/210528_en.html), MegaMart2 (<https://megamart2-ecsel.eu/>)

5. Title: Evaluation Framework for Promoting Gender Equality in Research and Innovation

Objectives: EFFORTI is responding to the topic GERI-3-2015, “Evaluation of initiatives to promote gender equality in research policy and research organizations” in context of Horizon 2020 – Science with and for Society (SWAFS). EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) seeks to analyze and model the influence of measures to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI systems. For this purpose, EFFORTI will (i) develop an evaluation framework which enables evaluators, science managers, policy-makers, and program owners to conduct a sound analysis of the research and innovation outputs, outcomes, and impacts of gender equality measures across Europe, with a focus on the national level; (ii) design a differentiated concept to characterize a variety of policy measures and assess their performance, taking into account the diversity in the national policies as well as in organizational contexts; and (iii) derive general lessons for evidence-based and thus “good” policy making in the field of gender equality within the RTDI system. This means that not only progress toward more gender equality in RTDI has been achieved but also RTDI has been able to benefit from this progress through enhanced scientific outputs and productivity and through a higher responsiveness to societal needs and challenges. The EFFORTI consortium consists of six partners representing a wide range of different institutional types, namely contract research organizations (Fraunhofer Society, Joanneum Research), universities (University of Catalonia, University of Aarhus), a NGO (Association of Hungarian Women in Science – NaTE), and a company (Intrasoft S.A.), distributed all over Europe (Germany, Austria, Spain, Denmark, Hungary, and Luxembourg).

Main researcher: Müller, Jörg

Project members: Arroyo Prieto, Lídia; Sáinz Ibáñez, Milagros

Research Group: Gender and ICT

Start date: 01/06/2016

End date: 31/05/2019

Funding entity: European Commission

Call: Call 2014 – 2015 “Science with and for Society”, H2020

More information: CORDIS (https://cordis.europa.eu/project/rcn/203534_en.html), EFFORTI (<https://www.efforti.eu/>)

6. Title: Communities of Practice for Accelerating Gender Equality and Institutional Change in Research and Innovation across Europe

Objectives: ACT will advance gender equality in the European Research Area by increasing gender expertise and operational effectiveness of Communities of Practice (CoPs) engaged in promoting institutional change and, in particular, implementation of gender equality plans (GEPs), within and across research performing organizations (RPOs) and research funding organizations (RFOs). ACT will contribute to this overall goal through the achievement of three specific objectives, each comprised of distinct but interlinked subobjectives.

Main researcher: Müller, Jörg

Research Group: Gender and ICT

Start date: 02/04/2018

End date: 01/04/2011

Funding entity: European Commission

Call: Call 2016-17 “Science with and for Society (SWAFS),” H2020

More information: ACT (<http://gender-ict.net/projects/act/>)

Other Affiliated Centers: The IN3 is affiliated to The global Network of Internet & Society Centers (NoC) and associated to CERCA institution (Centres de Recerca de Catalunya – Research Institutes of Catalonia)

Name: Internet Sociology Department

Address: Hochschule Fresenius, Jaegerstrasse 32, 10117 Berlin

Website: <http://www.internetsoziologie.de>

Description: The Internet Sociology Department of Hochschule Fresenius (Fresenius University of Applied Sciences) in Berlin is Germany’s first internet sociology department, founded in 2012 at the Berlin University of the Arts. Professor Stephan G. Humer, founder and director, is also senior fellow at the Digital Class of the Berlin University of the Arts. Several other involvements, e.g., at the University of Potsdam and the Bucerius Law School in Hamburg, complete his commitment to serve as a full-time researcher and innovator in the field of sociology of the internet and digital analyses. Since 2018, he is dean of Studies for the Digital Management Master’s Program (MA).

Topics: Internet, Society, Digitization, Digital, Sociology, Sociality, Security, Identity, Terrorism, Crime

Leading Members: Stephan G. Humer

Recent Projects or Publications

Jihadism online: https://www.sifo.de/files/Projektumriss_DiI.pdf

PERFORMANCE: https://www.sifo.de/files/Projektumriss_PERFORMANCE.pdf

Sociality by Design: http://www.internetsoziologie.at/de/wiki/index.php/Sociality_by_Design

FLYSEC: <http://www.fly-sec.eu/>

Cloud Computing and Abstraction: together with colleagues from TU Munich and MIT, researching the development of common Knowledge

Humer, S.; Abel, C.: Freiheit als Ambivalenz. Die Rolle der technischen Verführung. Freiheit und Internet, 2018

Eigenseer, A.E.; Humer, S.G.; Lederer, A.: Von der konventionellen zur intelligenten Videoüberwachung – Chancen und Risiken für Polizei und Gesellschaft. In: Rüdiger, T.-G., Bayerl, P.S. (ed.): Digitale Polizeiarbeit – Herausforderungen und Chancen. Springer, 2018

- Clasen, M.; Humer, S.: Digitalkrimi: Ein Bericht zur Lage des Cyberterrorismus. Kursbuch 188.
- Humer, S. (ed.): Terrorismus A/D. CSW-Verlag Winnenden, 2015.
- Internetsoziologie – Zwischenruf eines neuen Forschungsfeldes. In: Erich Marks & Wiebke Steffen (ed.): Neue Medienwelten – Herausforderungen für die Kriminalprävention? Ausgewählte Beiträge des 16. Deutschen Präventionstages. Forum Verlag Godesberg, 2013. S. 235 – 248.

Name: ALiGN (Alternative Global Network) Media Lab

Address: School of Journalism and Communication, Carleton University
1125 Colonel By Drive, Ottawa, ON

Website: <http://carleton.ca/align>

Description: The ALiGN (ALternative Global Network) Media Lab focuses on research, knowledge mobilization, and public engagement at the intersection of media (especially digital media), contestation of power, and collective resistance.

Broadly defined, ALiGN research revolves around the relationship between media and communication technologies, especially digital media, and collective/social movements, focusing on the spatialities, temporalities, and materialities of the movements. ALiGN research is trans and interdisciplinary in nature. It combines methods from social sciences (e.g., online/offline ethnography, historiography, interviews, participant observation, and content analysis) and computational science (e.g., computational network analysis, data mining, data visualization), use both small and big data approaches, and utilize visual, audial, and textual analysis.

ALiGN's mission is to work with communities and groups in engaging with and challenging dominant narratives, creating alternative narratives, and carving spaces of hope and resistance. This engagement will hopefully provide a tool or method to contest existing frameworks and allow new narratives from the voices and spaces often found on the margins to be heard. We aspire to also cooperate with communities to find ways to utilize digital technologies and alternative media for civic engagement, participation, and creating alternative networks. Partnering with communities and activists, we hope to generate alternative narratives about social movements, telling stories and reporting on new research, movements, and developments.

Topics: Alternative media, Activism, Social movement, Inequality, Privacy and surveillance

Leading Members: Merlyna Lim, Kathy Dobson, Scott Dobson-Mitchell, Nasreen Rajani, Leena An, Brandon Rigato, Ghadah Alrasheed, Hailey Ren

Recent Projects or Publications

Dobson, K., & Knezevic, I. (2018). "Ain't Nobody Got Time for That!": Framing and Stereotyping in Legacy and Social Media. Canadian Journal of Communication, 43(3).

- Lim, M. (2018). Roots, Routes, Routers: Communications and Media of Contemporary Social Movements. *Journalism & Communication Monographs Series*, 20(2): 92–136.
- Mitchell, S. S., & Lim, M. (2018). Too Crowded for Crowdsourced Journalism: Reddit, Portability, and Citizen Participation in the Syrian Crisis. *Canadian Journal of Communication*, 43(3).
- Lim, M. (2018). Sticks and Stones, Clicks and Phones: Contextualizing the Role of Digital Media in the Politics of Transformation. In: Richter C., Antonakis A., Harders C. (eds) *Digital Media and the Politics of Transformation in the Arab World and Asia* (pp. 9–34). Springer VS.
- Lim, M. (2017). Freedom to Hate: Social Media, Algorithmic Enclaves, and the Rise of Tribal Nationalism in Indonesia. *Critical Asian Studies*, 49 (3): 411–427.

Other Affiliated Centers: School of Journalism and Communication at Carleton University

Name: Centre for Postdigital Cultures

Address: Coventry University, United Kingdom

Website: <http://www.coventry.ac.uk/cpc>

Description: The Centre for Postdigital Cultures (CPC), a disruptive iteration of the Centre for Disruptive Media (<http://disruptivemedia.org.uk>), brings together media theorists, practitioners, activists, and artists. It draws on cross-disciplinary ideas associated with the posthuman, the posthumanities, the Capitalocene, and open and disruptive media to help both twenty-first-century society and the university to respond to the challenges they face in relation to the digital at a global, national, and local level. In particular, the CPC endeavors to promote the transformation to a more socially just and sustainable “post-capitalist” knowledge economy.

Topics:

Immersive Cultures and International Heritage: Developing and creating interactive postdigital archives, collections, objects, and artifacts that grow out of arts and humanities research and practice and become an international resource for both critical thinking about society, the macroeconomy, global politics, and the environment, and for the production of new art objects/events/practices, and that also reflect back on the human world, its heritage and agency.

Digital Arts and Humanities: Embracing scholarly activities that involve writing about postdigital media and technology and being engaged in processes of collaborative postdigital media production, practice, and analysis. These include building online journals, libraries, and databases; producing multimedia exhibits in exhibitions, museums, and art galleries; and exploring how various technologies and methods drawn from computer science, such as the mining, aggregation, and manipulation of open data, are reshaping the heritage, creative economy, and cultural sectors.

Posthumanities: Critically investigating some of the arts and humanities core foundational concepts and values, including the individual author, book, originality,

copyright, and even the human. By drawing on ideas of the nonhuman, the post-human, and the post-anthropocentric, the CPC facilitates a significant and original rethinking of the disciplinary hierarchies, traditions, and boundaries of both the humanities and the digital humanities.

Affirmative Disruption and Open Media: The former concept is employed in the sense in which the philosopher Roberto Esposito writes of an “affirmative biopolitics” in relation to the work of Michel Foucault, where an affirmative biopolitics is “one that is not defined negatively with respect to the dispositifs of modern power/knowledge but is rather situated along the line of tension that traverses and displaces them.” It thus involves the CPC in experimenting with a wide range of practices aimed at removing barriers and promoting collaboration with those in developing countries and emerging economies: from open access, open data, open science, and open education, through online sharing economies, digital gift economies, and global peer-to-peer communities, to creative media activism, guerrilla journalism, and so-called internet piracy, as well as ideas of the commons and commoning.

The Twenty-First-Century Art School: One of the main markets and cultural value networks that research in the CPC is working to affirmatively disrupt, through experiments in new, postdigital, posthumanities-related economic models, is our own “business”: namely, that of higher education (HE) and the ideas of the University and the Art School as they currently exist. Research under this theme explores some of the ways HE can respond to the creative disruption it is predicted to experience in the twenty-first century as the result of the development of disruptive digital technologies.

Post-capitalist Creative Economy: Another of the aims of the CPC is to envisage alternative forms for society and the economy in the twenty-first century world of postdigital media cultures and preemptive, cognitive, and contextual computing, beyond the all-pervasive algorithmic surveillance and control of market capitalism and its metrics. Exploring issues of big data, science visualization, and mapping, along with the perspectives of “big history,” “deep time,” and the “Anthropocene,” the center’s goal in this respect is to facilitate new articulations of postdigital culture that call for a radical rethinking of the relationship between the human, technology, the economy, and the environment.

Leading Members: Janneke Adema, Jacqueline Cawston, Peter Conlin, Adrienne Evans, Valeria Graziano, Gary Hall, Kaja Marczewska, Marcell Mars, Sarah Merry, Miriam de Rosa

Recent Projects or Publications

- Gary Hall (2016) *Pirate Philosophy* (Cambridge, Massachusetts: MIT Press).
Adrienne Evans and Sarah Riley (2014) *Technologies of Sexiness: Sex, Identity and Consumer Culture* (New York and Oxford: Oxford University Press).
Valeria Graziano and Kim Trogal (2017) ‘The Politics of Collective Repair: Examining Object-relations in a Postwork Society’, *Cultural Studies*, vol. 31, issue 5.

Janneke Adema and Kamila Kuc (2016) ‘Unruly Gestures: Seven Cine-paragraphs on Reading/Writing Practices in our Post-Digital Condition’ in M. De Rosa and L. Fales (eds). *Shifting Layers. New Perspectives in Media Archaeology Across Digital Media and Audiovisual Arts*. Mimesis International.

Kaja Marczewska (2018), *This Is Not Copy: Writing at the Iterative Turn* (London: Bloomsbury)

Name: Imagining the Internet Center

Address: 2850 Campus Box, Elon, NC 27244 ATTN: Janna Q. Anderson

Website: <http://www.elon.edu/e-web/imagining/default.xhtml>

Description: The Imagining the Internet Center’s mission is to explore and provide insights into emerging network innovations, global development, dynamics, diffusion, and governance. Its research holds a mirror to humanity’s use of communications technologies, informs policy development, exposes potential futures, and provides a historic record. It works to illuminate issues in order to serve the greater good, making its work public, free, and open. This history-and-forecast site’s design reflects its times – pages are set in templates designed at the time the content was created. Because of this, you will see varied looks to the site. The Imagining the Internet Center sponsors work that brings people together to share their visions for the future of communications and the future of the world.

Researchers at Elon University and the Pew Research Internet, Science & Technology Project have conducted canvassings of experts in 2004, 2006, 2008, 2012, 2014, 2016, 2017, and 2018, asking them to share their expectations for the future based on trends at the time. They are offered a series of questions or scenarios with which they can choose to agree or disagree, and they are asked to elaborate on their remarks in written responses that provide insights into issues.

Topics: Internet research, Internet futures, Infrastructure, Futurism, Predictions, Technological change

Leading Members: Janna Anderson, Lee Rainie

Recent Projects or Publications

<https://www.elon.edu/e-web/imagining/about/publications.xhtml>

Other Affiliated Centers: Pew Research

Name: The Cyber Law Program of the Cyber Security Research Center (H-CSRCL)

Address: The Hebrew University of Jerusalem

Website: <https://csrcl.huji.ac.il>

Description: The Law and Cyber Security research program brings together scholars, research fellows, and doctoral students from the Hebrew University's Faculty of Law and the Benin School of Computer Science and Engineering, in order to promote groundbreaking academic research in the field of information technology, law, and criminology, which can cultivate collaboration between academia, industry, and government. Specifically, the program studies, through using truly interdisciplinary methods, the prevention and regulation of cyber threats and related law enforcement challenges.

Topics: Cyber, Digital rights, International law, Criminology, Terrorism, Private law, Technology, Surveillance, Internet

Leading Members: Prof. Yuval Shany, Dr. Tamar Berenblum

Other Affiliated Centers: Cyber Security Research Center

Name: New Political Communication Unit

Address: Royal Holloway, University of London

Website: <http://www.newpolcom.rhul.ac.uk>

Description: The New Political Communication Unit was launched in 2007 and has three distinct but related foci of our research agenda:

- New media and communication technologies, particularly the internet, global digital television, mobile technologies, and the assorted media forms and practices that make up the increasingly converged but pluralistic information and communication environment that defines the contemporary era.
- New political behavior, institutions, and policy challenges that shape and are shaped by the rapidly changing information and communication environment.
- New theoretical dilemmas, methodological concerns, technologies, and techniques that arise from the need to effectively research these growing phenomena.

Topics: The Internet's impact on: (1) citizen activism, (2) parties and election campaigns, (3) international security, (4) privacy and surveillance, (5) the interplay of newer and older forms of media and journalism, and (6) media and internet regulation.

Leading Members: Ben O'Loughlin, Sofia Collignon, Elinor Carmi, Joanna Szostek, Jinghan Zeng, Akil Awan, James Sloam

Recent Projects or Publications

'Tweeting the Olympics' – collaboration between the NPCU, Open University and the BBC to help BBC World evaluate global conversations around the 2012 London Olympics and 2014 Sochi Olympics.

‘Cultural Relations in Societies in Transition’ – collaboration between the NCPU, Open University and the British Council to evaluate how cultural relations and communication operate in conflict societies.

Chadwick, A., Vaccari, C., & O'Loughlin, B. (2018). Do tabloids poison the well of social media? Explaining democratically dysfunctional news sharing. *New Media & Society*, DOI: 1461444818769689.

Miskimmon, A., O'Loughlin, B., & Roselle, L. (2017). Forging the world: Strategic narratives and international relations. University of Michigan Press.

Vaccari, C., Chadwick, A., & O'Loughlin, B. (2015). Dual screening the political: Media events, social media, and citizen engagement. *Journal of Communication*, 65(6), 1041–1061.

Name: Centre for Social Informatics

Address: Kardeljeva pl. 5, SI-1000 Ljubljana

Website: <http://cdi.si/>

Description: The Centre for Social Informatics (CSI) was established in 2011 and currently includes 26 researchers drawn from various disciplines as required by the complexity of internet society research. CSI activities refer to the area of social informatics, a discipline dealing with the role of information and communication technology (ICT) in contemporary society. The research projects at CSI are related to web survey methodology and the use of digital technology in social science data collection in general, safe use of the internet, social media, digital inequality, web, and mobile usability, etc. Researchers at CSI are one of the world's leading groups in the area of the web survey methodology. They have published numerous scientific articles, created the related global website WebSM (<http://www.websm.org>), and developed a tool for creating and managing web surveys EnKlikAnketa (OneClickSurvey: <http://english.1ka.si/>). In 2015, they gathered their scientific findings in the book by Callegaro, Lozar Manfreda, and Vehovar, *Web Survey Methodology*, published by Sage. Since January 2015, the CSI has been granted with the research program “Internet Research,” directed by Prof. Vasja Vehovar, PhD, which aims to investigate the internet as an object and as a tool for social science research.

Topics: Social science methodology, Web services, User experience, Better internet, Internet society, Digital inequality

Leading Members: Vasja Vehovar, Katja Lozar Manfreda, Vesna Dolničar, Andraž Petrovčič, Simona Hvalič Touzery, Jaroslav Berce, Sakari Taipale, Darja Grošelj, Jernej Berzelak

Recent Projects or Publications

1. Callegaro, M., & Lozar Manfreda, K., & Vehovar, V. (2015). Web survey methodology. Sage, 318 pp.

2. Sendelbah, A., & Vehovar, V., & Slavec, A., & Petrovčič, A. (2016). Investigating respondent multitasking in web surveys using paradata. *Computers in human behavior*, vol. 55, pp 777–787
3. Petrovčič, A., & Vehovar, V., & Dolničar, V. (2016). Landline and mobile phone communication in social companionship networks of older adults. *Technology in society: an international journal*, vol. 45, pp. 91–102
4. Safer Internet Centre Slovenia is the national project promoting and ensuring a better internet for kids. The project is cofinanced by the European Union's Connecting Europe Facility, in Slovenia. Financial support also comes from the Ministry of Public Administration. The project is run by a consortium of partners coordinated by Faculty of Social Sciences at the University of Ljubljana, Academic and Research Network of Slovenia (Arnes), Slovenian Association of Friends of Youth (ZPMS), and Youth Information and Counselling Center of Slovenia (MISS).
The Safer Internet Centre Slovenia has three components:
 - Awareness Centre Safe.si
 - Helpline Tom telefon
 - Hotline Spletno oko
5. Interreg Europe project ITHACA (InnovaTion in Health And Care for All): The project involves nine European regions with the shared ambition of accelerating the scaling up of smart health and care innovation that can support active and healthy living and secure the triple win of economic growth, more sustainable health and care systems, as well as the improved well-being of Europe's citizens. The lead partner on the project is the Dutch province of Noord-Brabant. Other project partners come from Denmark (Zealand Region), Slovenia (University of Ljubljana), Italy (Friuli Venezia Giulia Autonomous Region), the United Kingdom (NHS Liverpool Clinical Commissioning Group), France (GIP Autonom'lab), Spain (Basque Foundation for Health Innovation and Research), Poland (The Malopolska Region), and Germany (State of Baden-Württemberg). The head of the project at the University of Ljubljana is Vesna Dolničar from the Centre for Social Informatics (CSI).

ITHACA mirrors Interreg Europe's aims to improve the performance of policies for regional development, and its specific objective is to improve the implementation of regional development policies in areas of "smart specialization" and innovation opportunity. All ITHACA regions prioritize smart health and care, assisted living and innovation in their smart specialization strategies, and operational structural fund plans. The approach used within the project will lead to (a) improved delivery of innovation; (b) more effective ecosystems, improved technology transfer, and scaled-up economic exploitation of research and development; (c) market growth through greater public procurement of innovation and expanded consumer markets. The first phase of the project will run between 1 January 2017 and 31 December 2019, and the second phase will run between 1 January 2020 and 31 December 2022.

Name: Digital Policy Laboratory

Address: Department of Science, Technology, Engineering and Public Policy (STEaPP) University College London Boston House, 36–38 Fitzroy Square, London, W1T 6EY, UK

Website: <https://www.ucl.ac.uk/steapp/research/projects/digital-policy-lab>

Description: STEaPP's Digital Policy Lab works collaboratively across disciplines and with the national and international policy community to conduct research, which helps develop responses to the challenges and opportunities of emerging technologies.

Topics: Cybersecurity, Internet of Things, Artificial intelligence, Standardization, Governance, Regulation, Policy, International relations, Inclusion, Equality

Leading Members: Madeline Carr, Leonie Tanczer, Irina Brass, Ine Steenmans, Alex Chung, Carolin Kaltofen

Recent Projects or Publications

Projects

PETRAS IoT Research Hub (<https://www.petraphub.org/>): The PETRAS Internet of Things Research Hub is a consortium of nine leading UK universities which work together to explore critical issues in privacy, ethics, trust, reliability, acceptability, and security. Funding for the Hub includes a £9.8 million grant from the Engineering and Physical Sciences Research Council (EPSRC) which will be boosted by partner contributions to approximately £23 million in total. This project also runs in collaboration with IoTUK.

Gender and IoT (<https://www.ucl.ac.uk/steapp/research/projects/digital-policy-lab/dpl-projects/gender-and-iot>): Gender and IoT is an interdisciplinary project exploring the implications of IoT on gender-based domestic violence and abuse and is funded by a Social Science Plus+ Award from UCL's Collaborative Social Science Domain.

Evaluating Cyber Security Evidence for Policy Advice (<https://www.ucl.ac.uk/steapp/research/projects/ecsepa>): Evaluating Cyber Security Evidence for Policy Advice (ECSEPA) is a two-year, EPSRC funded project developed in collaboration with a range of partners including the Sociotechnical Security Group at the National Cyber Security Centre and the Cyber Policy team at the Foreign and Commonwealth Office. The project seeks to provide support for cyber security policy makers in the UK, specifically those civil servants who provide short- and long-term policy advice, either in response to specific crisis incidents or in the context of longer term planning for national security and capacity building.

Publications

Tanczer, L., Brass, I., Elsden, M., Carr, M., & Blackstock, J. (forthcoming). The United Kingdom's Emerging Internet of Things (IoT) Policy Landscape. In R. Ellis & V. Mohan (Eds.), Rewired: Cybersecurity Governance. Wiley.

- Brass, I., Tanczer, L., Carr, M., Elsden, M., & Blackstock, J. (2018). Standardising a Moving Target: The Development and Evolution of IoT Security Standards. In Living in the Internet of Things: Cybersecurity of the IoT – 2018. London, UK: IET. <https://doi.org/10.1049/cp.2018.0024>
- Tanczer, L., Yahya, F., Elsden, M., Blackstock, J., & Carr, M. (2017). Review of International Developments on the Security of the Internet of Things (pp. 1–37). London: PETRAS IoT Hub; STEaPP. <https://www.gov.uk/government/publications/secure-by-design>
- Brass, I., Tanczer, L., Carr, M., & Blackstock, J. (2017). Regulating IoT: Enabling or Disabling the Capacity of the Internet of Things? Risk & Regulation Magazine of the Centre for Analysis of Risk and Regulation (CARR), 33(Summer), 12–15.
- Carr, M. (2016). Public–private partnerships in national cyber-security strategies. International Affairs, 92(1), 43–62.

Name: Optus Macquarie University Cyber Security Hub

Address: EMC building – 3 Innovation Road – Level 1 – Suite 11 Macquarie University NSW 2109 Ryde Australia

Website: <https://www.mq.edu.au/cyber-security-hub>

Description: The Optus Macquarie University Cyber Security Hub is an exciting collaboration between Macquarie University and Optus. Ultimately, the Cyber Security Hub forms a network of academic, business, and government leaders

- Providing expertise and leadership in cyber security regarding technology, governance, economics, policies, and human factors
- Offering a platform for exchange between academics and practitioners from business and government
- Conducting cross-cutting research across several disciplines: computing, engineering, business, criminology, law, and psychology
- Training the next generation of cybersecurity specialists as well as raising awareness among our leaders and developing the skills of the existing workforce

Leading Members: Dali Kaafar, Annabelle McIver, Mark Wiggins, Pavel Shevchenko

Name: Center for Information Policy Research (UW-Milwaukee)

Address: University of Wisconsin-Milwaukee

Northwest Quad Building B

2025 E Newport Ave

Milwaukee, WI 53211

Website: <http://cipr.uwm.edu/>

Description: The Center for Information Policy Research (CIPR) is the University of Wisconsin-Milwaukee's multidisciplinary research center for the study of the intersections between the policy, ethical, political, social and legal aspects of the global information society. CIPR's research and scholarship focuses on such key information policy issues as intellectual property, privacy, intellectual freedom, access to information, censorship, cyberlaw, and the complex array of government, corporate, and global information practices and policies.

With information infrastructures and technologies and the globalization of information evolving at a faster pace than our social, legal, and educational systems, it is imperative that information policy issues be examined systematically in an interdisciplinary environment. Established in 1998 within the University of Wisconsin – Milwaukee School of Information Studies (SOIS), CIPR facilitates information policy research through its research agenda, lecture series, consulting and outreach activities, and its various fellows programs.

CIPR welcomes formal and informal collaborations with other scholars, institutions, and agencies interested in information ethics, law, or policy. CIPR personnel are available for consultations, advisement, presentations, and related educational and outreach opportunities.

Topics: Information policy, Information ethics, Privacy, Intellectual property, Intellectual freedom, Internet research ethics

Leading Members: Michael Zimmer

Recent Projects or Publications

“PERVADE: Pervasive Data Ethics for Computational Research.” National Science Foundation, CHS: Large: Collaborative Research grant (2017–2021)

“Library Values & Privacy in our National Digital Strategies: Field guides, Conventions, and Conversations.” Institute of Museum and Library Services (IMLS) National Leadership grant (2017–2018)

“Mapping Privacy and Surveillance Dynamics in Emerging Mobile Ecosystems: Practices and Contexts in the Netherlands and US.” National Science Foundation EAGER (EARly-concept Grants for Exploratory Research) grant (2016–2019)

“Assessing the Implementation of CIPA-Mandated Internet Filtering in U.S. Public Libraries.” UW-Milwaukee Research Growth Initiative (2017–2018)

Name: Laboratory of Computer-Mediated Communication (LabCMO)

Address: Paul-Gérin-Lajoie Building
Université du Québec à Montréal (UQAM)
1205 rue Saint-Denis
Montréal (Québec) H2X 3R9
Louis-Jacques-Casault Building

Université Laval
1055 avenue du Séminaire
Québec (Québec) G1V 0A6
Website: www.labcmo.ca

Description: The Laboratory of Computed-Mediated Communication (Laboratoire de communication médiatisée par ordinateur – LabCMO in French) is a research and sociotechnical experimentation space gathering scholars with various research interests (emerging media and their publics, user studies, participatory culture, social dynamics online, civic engagement, free software, and citizen science among others) around the broadly defined field of digitally mediated communication. Overall, about 80 scholars based in Montreal and Quebec City, including graduate students and postdocs, are affiliated to the Lab. They come from a variety of disciplines ranging from sociology to computer science and anthropology, with a significant anchorage in communication and media studies and marked by a strong influence of science and technology studies (STS).

LabCMO's research program seeks to understand the uses of digital media in relation to societal changes. It achieves this objective through interdisciplinary and predominantly qualitative studies with a focus on concrete uses of digital devices and infrastructures and their embedding in everyday life.

Topics: User studies, Participatory culture, Emerging medias and their publics, Citizen science, Science and technology studies, Social media research, Civic engagement, Research methods in digital environments, Free software, Infrastructure studies

Leading Members: Florence Millerand, Guillaume Latzko-Toth, Serge Proulx, Alexandre Coutant, Claudine Bonneau, Mélanie Millette, Régis Barondeau, Stefanie Duguay, Lorna Heaton, Madeleine Pastinelli, Florence Piron, Jonathan Roberge

Recent Projects or Publications

- Heaton, L., Millerand, F. et Dias Da Silva, P. (2018). *La reconfiguration du travail scientifique en biodiversité: pratiques amateurs et technologies numériques*. Montréal: Presses de l'Université de Montréal.
- Latzko-Toth, G., Pastinelli, M., Gallant, N. (2017). “Usages des médias sociaux et pratiques informationnelles des jeunes Québécois: le cas de Facebook pendant la grève étudiante de 2012”, *Recherches sociographiques*, 58(1), 43–64.
- Latzko-Toth, G., Bonneau, C., Millette, M. (2017). “Small Data, Thick Data: Thickening Strategies for Trace-Based Social Media Research”. In Quan-Haase, A. et Sloan, L. (eds.) *The Sage Handbook of Social Media Research Methods* (199–214). Thousand Oaks, CA, US: SAGE.
- Latzko-Toth, G., Proulx, S. (2016). « Enjeux éthiques de la recherche sur le web ». In C. Barats (ed.), *Manuel d'analyse du web en Sciences Humaines et Sociales* (2nd edition, 38–54). Paris: Armand Colin.

Proulx, S., Garcia, J.L. et L. Heaton (eds.). (2014). *La contribution en ligne. Pratiques participatives à l'ère du capitalisme informationnel*. Québec: Presses de l'Université du Québec.

Other Affiliated Centers: Interuniversity Research Center on Science and Technology (CIRST), Chaire de recherche UQAM sur les usages des technologies numériques et les mutations de la communication

Name: Club for internet and society enthusiasts

Address: Moscow, Baumanskaya street, 58/25

Website: <http://clubforinternet.net/en>

Description: Club for internet and society enthusiasts is an informal network of researchers who are interested in internet.

Rather wide word “researchers” means scholars, business research specialists, artists, journalists, IT-specialists etc.

Since 2015, we organize seminars, reading clubs, conferences, online schools, study expeditions and finally, research initiatives.

We collaborate with universities, journals, companies, NGO, and museums in different parts of Russia and beyond.

Our key idea is to develop internet studies as an interdisciplinary field. As a club, we provide a common space for knowledge production, where people from different spheres are involved. We use scientific method, but keep the discussion opened.

Topics: Internet histories, STS, Web histories, Policy analysis, Internet in different cities, Videobloggers, Qualitative research

Leading Members: Polina Kolozaridi, Lenya Yuldashev, Anya Schetwina, Adi Kuntsman (in collaboration), Olga Dovbysh

Recent Projects or Publications

We have started research activity in 2017, so there are not very much publications yet. The key areas of research are:

- Internet history and contemporary development in different Russian cities: local aspects and diversity of development on the city-level
- YouTube in Russia: networked publics, public intellectual role in YouTube and nostalgia
- Digital disengagement (together with Adi Kuntsman)
- Imaginaries of the internet in state VS media discourses

Shubenkova, A. Y., & Kolozaridi, P. V. (2016). The Internet as a subject of social policy in the official discourse of Russia: a benefit or a threat? *Journal of researches of social policy*, 14(1), 39–54.

- Asmolov, G., & Kolozaridi, P. (2017). The Imaginaries of RuNet. *Russian Politics*, 2(1), 54–79.
- Kolozaridi P.V., Makusheva M.O. (2018) The Internet as a problematic field of study in social sciences. *Monitoring of Public Opinion: Economic and Social Changes*. 2018. № 1. P. 1–11
- Other Affiliated Centers: We have been organized instead of center for New Media and Society, Moscow

Name: Nordic Centre for Internet and Society

Address: Nydalsveien 37, 0484 Oslo

Website: <http://www.bi.edu/ncis>

Description: Bringing together a wide range of disciplines, various methodologies, and diverse viewpoints, we seek to analyze and understand the growing influence of digital technologies on working life and society.

Topics: Digital labor, Sharing economy, Gig economy, Crowd work, Participation, Privacy, Ethics, Algorithms

Leading Members: Christian Fieseler, Sut I Wong, Christoph Lutz, Gemma Newlands, Eliane Bucher

Recent Projects or Publications

Bucher, E., & Fieseler, C. (2017). The flow of digital labor. *New Media & Society*, 19(11), 1868–1886.

Fieseler, C., Bucher, E., & Hoffmann, C. P. (2017). Unfairness by design? The perceived fairness of digital labor on crowdsourcing platforms. *Journal of Business Ethics*, online first, 1–19.

Lutz, C., Hoffmann, C. P., Bucher, E., & Fieseler, C. (2018). The role of privacy concerns in the sharing economy. *Information, Communication & Society*, 21(1), 1472–1492.

Ranzini, G., & Lutz, C. (2017). Love at first swipe? Explaining Tinder self-presentation and motives. *Mobile Media & Communication*, 5(1), 80–101.

Project

“Fair Labor in the Digitized Economy.” A 4-year research project publicly funded by the Research Council of Norway. More information: <https://www.bi.edu/fair-digital>

Other Affiliated Centers: Berkman Klein Center for Internet and Society, HIIG. The Nordic Centre for Internet and Society is also part of the Global Network of Centers (<https://networkofcenters.net/>) and the European Hub for Internet and Society Research.

Name: Center for Internet Studies and Digital Life

Address: University of Navarra. Communication Building. Campus universitario 31009 Pamplona (Spain)

Website: <https://www.unav.edu/web/digitalunav>

Description: The Center for Internet Studies and Digital Life was set up in September 2013 and is affiliated with the School of Communication at the University of Navarra; its mission is to foster research on the forms and impact of digital activity in the complex, changing field of communication. The establishment of the Center is another milestone in the School's academic history, in which online media have been addressed through both teaching and research activities since the internet's emergence as a global medium.

Over 30 people currently work in the Center for Internet Studies and Digital Life

Topics: There are three broad areas of research: People, Contents, and Companies. Each area encompasses a number of fields of research, such as the use of social networks, online journalism, interactive advertising, new business models for communications companies, and the impact of the internet on electoral campaigns, civic movements, etc.

Leading Members: Ana Azurmendi, Ramón Salaverría, Charo Sádaba, Francisco J. Pérez-Latre, Alfonso Vara, Avelino Amoedo, Samuel Negredo, José Luis Orihuela, Bienvenido León, Mercedes Medina

Recent Projects or Publications

JOLT. Marie Skłodowska-Curie Actions (MSCA) network aimed at harnessing digital and data technologies for journalism. The Center develops two research projects: Branding Data Journalism will investigate the strategic value of data journalism, including data journalism collaborations, for individual legacy newspapers. Globalised Online News will investigate the globalization of news provision beyond traditional geographic boundaries. Host: University of Navarra, Spain.
Advert: JOLT_Globalised Online News

Digital News Report: As partner of Reuters Institute for the Study of Journalism (University of Oxford), since 2014, the Center is responsible for the design and analysis of the Digital News Report in Spain.

CreBiz Project: Business Development Laboratory Study Module. The objective of CreBiz (October 2014–September 2016) has been to create a business development laboratory study module for undergraduate and graduate students who have potential to be (self) employed after their graduation in the field of creative industries. CreBiz aimed to establish a working module for business development laboratory that can be used in any European university.

UNSPRINME: News Preferences and Use within the New Media Scenario in Spain: Audiences, Companies, Contents, and Multiscreen Influence Management. The main aim of this project (January 2016–December 2018) is to identify uses and

preferences of the audience within consumption of multiscreen information, and to compare them to the current media map, which is the outcome of 20 years of digital journalism in Spain. This R+D project has been granted by the Ministry of Economy and Competitiveness of Spain (project ref.: CSO2015-64662-C4-1).

Name: Institute for Communication Sciences CNRS/Sorbonne

Address: Internet & Society CNRS 59/61 rue Pouchet 75849 Paris cedex 17

Website: <http://www.iscc.cnrs.fr/spip.php?article1435>

Description: The Institute of Communication Sciences (ISCC) is a research center jointly supervised by the French National Center for Scientific Research (CNRS), Paris Sorbonne University, and University Pierre and Marie Curie (UPMC).

Its activities, spanned in 12 research groups, are dedicated to interdisciplinary research in communication science with a special interest in the interaction between science, technologies, and society. In particular, three research groups are dedicated to the interplay of the internet and other digital technologies and society, among which the Digital Path and the Information and Commons research groups

Topics:

- STS approaches to internet governance
- Decentralized and distributed architectures of the internet, platforms, networks
- Socioeconomic approaches to technologies of privacy protection (encryption, privacy by design)
- Peer production and sharing economy
- Open Access to public sector information, scientific data and publications, and public domain works
- Digital heritage and heritagization
- Legal and technical infrastructure for digital commons

Leading Members: Melanie Dulong de Rosnay, Ksenia Ermoshina, Francesca Musiani, Valérie Schafer, Félix Tréguer

Recent Projects or Publications

NEXTLEAP H2020

NEXTLEAP (NEXT generation techno-social and Legal Encryption Access and Privacy) aims to create, validate, and deploy communication and computation protocols that can serve as pillars for a secure, trust-worthy, annotable, and privacy-respecting internet that ensures citizens fundamental rights. For this purpose, NEXTLEAP will develop an interdisciplinary internet science of decentralization that provides the basis on which these protocols will be built.

<https://nextleap.eu/>

netCommons H2020

netCommons (network infrastructure as a Commons) is a Horizon2020 research project, which follows a novel transdisciplinary methodology on treating network infrastructure as commons, for resiliency, sustainability, self-determination, and social integration. Project partners have expertise in engineering, computer science, economics, law, political science, urban, media, and social studies; and close links with successful community networks like guifi.net, ninux.org, and sarantaporo.gr.

<https://netcommons.eu/>

Dulong de Rosnay, M. (2016), Peer to party: Occupy the law, First Monday, 21 (12), <https://doi.org/10.5210/fm.v21i12.7117>. <http://journals.uic.edu/ojs/index.php/fm/article/view/7117/5658>

Dulong de Rosnay, M., & Musiani, F. (2016). Towards a (de) centralisation-based typology of peer production. tripleC, 14(1), 189–207.

<https://www.triple-c.at/index.php/tripleC/article/view/728>

Epstein, D., Katzenbach, D. & Musiani, F. (eds., 2016), Doing internet governance: practices, controversies, infrastructures, and institutions, Internet Policy Review, 5(3). <https://policyreview.info/archives/2016/issue-3>

Name: Institute for Information Policy

Address: Donald P. Bellisario College of Communications, Penn State University

Website: <https://bellisario.psu.edu/research/centers/iip>

Description: The IIP conducts groundbreaking research and innovative programs on the social implications of information technology, with an emphasis on the potential of information technologies for improving democratic discourse, social responsibility, and quality of life. Its annual workshops unite experts from across the globe to share research on issues of access and security.

Topics: Broadband, Information and internet policy, Rural community access, Marginalized communities

Leading Members: Krishna P. Jayakar, Carleen F. Maitland, Richard D. Taylor, Amit M. Schejter

Recent Projects or Publications

The IIP publishes the Journal of Information Policy since 2010: http://www.psypress.org/Journals/jnls_JIP.html

Maitland, C. (2018) (ed.) Digital Lifeline? ICTs for Refugees and Displaced Persons. Cambridge, MA: MIT Press

Jayakar, K. Maitland, C. Peña, J., Strover, S. & Bauer, J. (2016). Broadband 2021: Report of the Interdisciplinary Workshop on the Development of a National Broadband Research Agenda. (available at: https://bellisario.psu.edu/assets/uploads/Broadband_2021.pdf)

Name: QUT Digital Media Research Centre

Address: Z1-515, Queensland University of Technology, Kelvin Grove QLD 4059, Australia

Website: <http://research.qut.edu.au/dmrc>

Description: The QUT Digital Media Research Centre (DMRC) conducts world-leading research for a creative, inclusive, and fair digital media environment. In our work as a center, we aim to undertake high-quality research that generates deep understanding, as well as engaging in direct intervention and external advocacy. The DMRC is one of the top Australian centers for media and communication research, areas in which QUT has achieved the highest possible rankings in ERA, the national research quality assessment exercise. The DMRC has access to cutting-edge research infrastructure and capabilities in digital methods such as social media analytics. We actively engage with industry and international partners in Australia, Europe, Asia, the USA, and South America; and we are especially proud of the dynamic and supportive research training environment we provide to our many local and international graduate students.

Led by Centre Director Jean Burgess, we are based in the School of Communication in the Creative Industries Faculty, with several core center members based in the Law and Education Faculties and with collaborations across health, science and engineering, and business, as well as active participation in the Institute for Future Environments.

The DMRC is also a member of the global Network of Centers – a group of academic institutions with a focus on interdisciplinary research on the development, social impact, policy implications, and legal issues concerning the internet.

Topics:

Creativity and Innovation: We investigate the settings and dynamics that foster vibrant and internationally competitive local creative content industries; recognizing that creativity and innovation can come from anywhere, including from marginalized communities and nonexpert creators. We trace the emergence and dynamics of new digital media and entertainment industries and businesses; and we map the skills, identities, and labor dynamics associated with creative work in these sectors.

Inclusion and Diversity: We conduct basic and problem-solving research into the challenges of population-wide digital access, as well as helping to embed throughout society the capability and skills to operate effectively as consumers and media professionals in the digital media environment. We map the social and cultural diversity of digital culture and the inclusiveness of platforms, recognizing not only that multiple forms of diversity need to be considered in governance and inclusion but also that social diversity is a vibrant source of creativity and innovation.

Trust and Fairness: We undertake analysis and advocacy that promotes the transparent and just governance of the media environment, which is populated by a diverse array of local and international media organizations and platforms. We seek to promote a media environment that enhances social cohesion, that treats participants fairly, and that takes seriously the role of digital media platforms in curating our culture, and in coordinating our political communication and social interactions.

We investigate how deep social and historical questions (like democracy and trust) are challenged by new technological developments (from algorithmic news curation to the blockchain), and explore the new models of media practice, regulation, and governance that might emerge from these developments.

Leading Members: Axel Bruns, Jean Burgess, Elija Cassidy, Stuart Cunningham, Michael Dezuanni, Tim Highfield, Stephen Harrington, Peta Mitchell, Nicolas Suzor, Patrik Wikström

Recent Projects or Publications

Bruns, A. (2018). Gatewatching Revisited: News Curation in the Social Media Age. New York: Peter Lang.

Burgess, J., Marwick, A., & Poell, T. (2017) The SAGE Handbook of Social Media. London: SAGE.

Cunningham, S. & Craig, D. (2019, forthcoming) Social Media Entertainment:

The New Intersection of Hollywood and Silicon Valley. New York: NYU Press.

Highfield, T. (2016) Social media and everyday politics. Cambridge: Polity Press.

For projects see: <http://research.qut.edu.au/dmrc/projects>

Other Affiliated Centers: DMRC is a member of the Network of Centers (NoC)

Name: Infoscape Research Center

Address: Ryerson University

Website: Infoscapelab.ca

Description: Centre for the study of Digital Code

Topics: Digital culture, Research-creation, Social media studies, Surveillance studies

Leading Members: Greg Elmer, Ganaele Langlois, Matthew Tiessen

Recent Projects or Publications

See our website

Other Affiliated Centers: The Catalyst Research hub, Ryerson University

Name: Center for Information Technology and Society

Address: University of California Santa Barbara, Santa Barbara CA 93106-4020

Website: cits.ucsb.edu

Description: CITS is dedicated to interdisciplinary research and education that seeks to understand and help shape the complex development, use, and social effects

of information technologies. We foster cutting-edge research across engineering, social sciences, and humanities through dynamic connections with academia, industry, and government.

Topics: Fake news, Online hate, Algorithms and cultural practices, Credibility

Leading Members: Joseph B. Walther, Bruce Bimber, Cynthia Stohl, Andrew Flanagin, Alan Liu, Miriam Metzger, Elizabeth Belding, John Mohr, Rita Raley, Jim Blascovich

Recent Projects or Publications

Citizen's Guide to Fake News, <http://cits.ucsb.edu/fake-news>

Dunbar, N., Miller, C., Lee, Y.-H., L. Jensen, M., Anderson, C., Adams, A., Elizondo, J., Thompson, W., Massey, Z., Nicholls, S.B., Ralston, R., Mathews, E., Roper, B. & Wilson, S. (2018). Reliable deception cues training in an interactive video game. *Computers in Human Behavior*, 85, 74–85. <https://doi.org/10.1016/j.chb.2018.03.027>

El Sherief, M., Belding, E. M., & Nguyen, D. (2017). #NotOkay: Understanding gender-based violence in social media. *Proceedings of the International Conference on Web and Social Media* (pp. 52–61). Stanford, CA.

Georgiou, T., El Abbadi, A., & Yan, X. (2016). Extracting topics with focused communities in multi-dimensional social data. *2017 ACM Conference on Computer Supported Cooperative Work and Social Computing* (pp. 1432–1443). Portland, OR.

Holt, J., & Malčić, S. (2015). The privacy ecosystem: Regulating digital identity in the United States and European Union. *Journal of Information Policy*, 5, 155–178.

Name: Digital Society Network

Address: Faculty of Social Sciences, University of Sheffield, Sheffield, UK

Website: <https://www.sheffield.ac.uk/faculty/social-sciences/digital-society-network>

Description: The Digital Society Network (DSN) is a loose network of researchers examining all aspects of digital-society relations. It is part of The University of Sheffield (TUSoS)'s Faculty of Social Sciences.

The DSN aims to:

Stimulate and support digital society research

Enable collaborations within and beyond the Faculty

Host activities which result in research funding and knowledge exchange

Leading Members: Helen Kennedy, Elisa Serafinelli, Ysabel Gerrard, Jo Bates

Recent Projects or Publications

Seeing Data (seeingdata.org)

Name: SIRG: The Stockholm Internet Research Group

Address: SOFI, Stockholms universitet

106 91 Stockholm

Sweden

Website: www.sirg.se

Description: SIRG, or Stockholm Internet Research Group, is an interdisciplinary research group of social scientists from subjects such as sociology, economics, and computer and systems sciences. We are based at Stockholm University, Sweden.

We believe that it takes multidisciplinary approaches to understand how new technologies impact everyday life. Our main objective is to support a creative, interdisciplinary research environment in order to strengthen social science research on human interaction in and around the internet. As such, we work as a connecting framework for a wide variety of internet research.

Topics: Social interaction online, Discrimination online, Anonymity online, Online gaming, Digital games in Museums, Norms in online gaming

Leading Members: Lina Eklund, Emma von Essen, Magnus Johansson, Fatima Jonsson.

Recent Projects or Publications

Projects

1. Anonymity and Trust Online: an interdisciplinary project

This research project funded is by the Swedish Science Council. It focuses on the varying effects, both positive and negative, of online anonymity on two separate online arenas: online auctions and digital gaming. This mixed methods project draws from the interdisciplinary nature of the researcher and strives to bring new insight into the workings of social interaction on the internet.

Lina Eklund, Emma von Essen, Magnus Johansson, Fatima Jonsson, Joakim Jansson.

2. Social Relationships in the Network Society

This research project is funded by FORTE, The Swedish Research Council for Health, Working Life and Welfare. The project investigates the changing opportunities that digital technology offers for family social life.

Lina Eklund, Helga Sadowski

3. Worlds of Video gaming

This project is funded by Kulturrådet and is part of a broader initiative at the National Museum of Technology in Sweden. The aim is to highlight a broad approach to digital games based from both producer and user perspectives. By studying actual gaming practices, we can understand games themselves as cultural objects and the current use of games and ultimately how these must be studied together to create a picture of how contemporary games influence culture and society.

Lina Eklund, Patrick Prax, Björn Sjöblom

Publication

4. Eklund, Lina and Sara Roman (2018). Digital Gaming and Young People's Friendships: A Mixed Methods Study of Time Use and Gaming in School. YOUNG: Nordic Journal of Youth Research, Article first published online: March 5, 2018 <https://doi.org/10.1177/1103308818754990>

5. Kou, Y, Johansson, M and Verhagen, H. (2017) Prosocial behavior in an online game community: an ethnographic study. In Proceedings of the 10th International Conference on the Foundations of Digital Games, FDG 2017

Other Affiliated Centers: SOFI

Name: NetLab Network

Address: 55-1001 Prince Arthur Ave, Toronto Canada M5R 1B3

Website: <http://www.chass.utoronto.ca/~wellman>

Description: The NetLab Network is virtual. Centered in Toronto, we are a worldwide network of scholars who study the intersection of social networks, computer networks, and communication networks

Topics: Social networks, Networked individualism, Older-adults community, Networked organizations, Networked-research kinship friendship

Leading Members: Barry Wellman, Anabel Quan-Haase, Keith-Hampton, Helen Hua Wang, Tsahi Hayat, Dimitrina Dimitrova, Anatoliy Gruzd, Philip Mai, Alice Renwen Zhang, Molly-Gloria Harper

Recent Projects or Publications

Hua Wang, Renwen Zhang, and Barry Wellman. 2018. "How Are Older Adults Networked? Insights from East Yorkers' Network Structure, Relational

- Autonomy, and Digital Media Use.” *Information, Communication and Society*, 21 5 (May): 681–696.
- Anabel Quan-Haase, Carly Williams, Maria Kicevski, Isioma Elueze, & Barry Wellman. 2018 “Dividing the Grey Divide: Deconstructing Myths about Older Adults’ Online Activities, Skills, and Attitudes.” *American Behavioral Scientist* 62,9 (August): 1207–1228 [special issue on the digital divide]: <https://doi.org/10.1177/0002764218777572>
- Keith Hampton and Barry Wellman. 2018. “Lost and Saved... Again: The Moral Panic about the Loss of Community Takes Hold of Social Media.” *Contemporary Sociology*: forthcoming.
- Anabel Quan-Haase, Hua Wang, Barry Wellman, and Renwen Zhang. 2018. “Weaving family connections on and offline: The turn to networked individualism.” Pp. 57–77 in *Connecting Families: Information & Communication Technologies, Generations, and the Life Course*. Edited by Bárbara Barbosa Neves and Cláudia Casimiro. Bristol, UK: Policy Press. <http://policy.bristoluniversitypress.co.uk/connecting-families>
- Barry Wellman. 2018 “The Family Has Become a Network.” Pp. 1–7 in *Connecting Families: Information & Communication Technologies, Generations, and the Life Course*. Edited by Bárbara Barbosa Neves and Cláudia Casimiro. Bristol, UK: Policy Press.

Name: Digital Matters Lab

Address: University of Utah

295 S 1500 E

Salt Lake City, UT 84112-0860

Website: digitalmatters.utah.edu

Description: A joint venture with the Marriott Library, Colleges of Humanities, Fine Arts, and Architecture and Planning; Digital Matters is the umbrella term for a threefold initiative:

To serve as the locus for computationally enhanced humanities and arts research and pedagogy, with a strength in cultural criticism and theory.

To provide a space for undergraduate, graduate, and faculty to learn both method and methodologies of humanities and arts-centered information technology.

To link the Digital Matters with multiple disciplines and the broader community.

Topics: Future of the book, Digital materiality, Digital art, Design

Leading Members: David Roh, Rebekah Cummings, Elizabeth Callaway, Elizabeth Swanstrom

Recent Projects or Publications

Anna L. Neatrour, Elizabeth Callaway, Rebekah Cummings, (2018) “Kindles, card catalogs, and the future of libraries: a collaborative digital humanities project”, *Digital Library Perspectives*, <https://doi.org/10.1108/DLP-02-2018-0004>

David S. Roh, (2018) “The High Cost of Inexpensive Kindles”, Digital Matters Lab, <https://digitalmatters.utah.edu/2018/08/08/cultural-review-amazon-kindle/>

Name: Utrecht Data School & Datafied Society

Address: Drift 13, 3512 EV Utrecht, Netherlands

Website: www.dataschool.nl – www.datafiedsociety.nl

Description: Utrecht Data School is a platform for teaching digital methods and data analysis and for exploring the datafication of society through (applied) research projects in various societal sectors. Cooperating closely with external partners (public management organizations, companies, and NGO's) student teams and researchers conduct data analysis and advise on responsible data practices. Participating in the field as experts provides rich opportunities to observe, describe, and conceptualize the datafication of society and how it affects citizenship, democracy, and public sphere. While Utrecht Data School focuses on teaching and applied research, Datafied Society facilitates interdisciplinary academic research projects. Datafied Society addresses societal challenges emerging from novel data practices in public governance and management, (public) media, and public space and seizes opportunities for using data practices to foster citizenship, civic participation, and creative production. Cooperating with academic partners from different disciplines and societal partners such as municipalities and ministries, and partners from creative industries, and civil society, it functions as an impromptu think tank on emerging sociopolitical issues related to datafication and is focused on knowledge transfer and societal impact.

Topics: Data ethics and accountable algorithms, Political communication on social media, Governance and the digital society, Algorithms and data practices in media industries, Smart Cities – data practices of municipal governments, citizens, entrepreneurs, and activists, Tool criticism

Leading Members: Mirko Tobias Schäfer, Karin van Es, José van Dijck, Tim de Winkel, Maranke Wieringa, Gerwin van Schie, Daniela van Geenen

Recent Projects or Publications

Schäfer, Mirko Tobias and Karin van Es (eds). 2017. *The Datafied Society. Studying Culture through Data*. Amsterdam: Amsterdam University Press.

Wieringa, Maranke, Daniela van Geenen, Mirko Tobias Schäfer, and Ludo Gorzeman. 2018. Political topic-communities and their framing practices in the Dutch Twittersphere. In: *Internet Policy Review*, Vol 7, No 2

Van Es, Karin. 2017. “An Impending Crisis of Imagination: Data-Driven Personalization in Public Service Broadcasters.” *Media@LSE Working Paper Series* <http://www.lse.ac.uk/media@lse/research/mediaWorkingPapers/pdf/Working-Paper-43.pdf>

- Van Es, Karin, Daniela van Geenen and Thomas Boeschoten. 2015. “Re-imagining Television Audience Research: Tracing Viewing Patterns on Twitter.” M/C Journal. <http://journal.media-culture.org.au/index.php/mcjourn/article/view/1032>
- Schäfer, Mirko Tobias (ed.) 2016. Challenging Citizenship: Social Media and Big Data, special issue Journal Computer Supported Cooperative Work, Volume 25, Issue 2–3, June 2016, <http://link.springer.com/journal/10606/25/2/page/1>



Researching Affordances

18

Aske Kammer

Contents

The Concept of Affordances	339
Conceptual Developments	340
Imagined Affordances	342
Researching Affordances	342
Closing Remark	347
References	348

Abstract

In an age of profound technological changes, the concept of affordances has assumed a prominent position in the vocabulary scholars use to describe and analyze current transformations. Affordances is a concept that is subject to continuous developments and renegotiations through the scholarly conversation, even if the conceptual core of it (that it relates to the possibilities for action that an environment or artifact offer a living being) remains stable. This chapter provides a conceptual overview and discussion of the concept of affordances, outlining the most important positions and developments in its history. Furthermore, the chapter proposes a methodological procedure for measuring quantitatively the use of affordances; this way, it suggests to broaden the scholarly focus on affordances beyond situated qualitative cases to also pay an interest to the use of affordances across larger samples of communicative, organizational, or institutional contexts.

Keywords

Affordances · Methodology · Technology

A. Kammer (✉)

The IT University of Copenhagen, Copenhagen, Denmark
e-mail: aska@itu.dk

In recent years, as digitalization has transformed the technological conditions for interaction, communication, and participation, the concept of *affordances* has assumed a prominent position in the vocabulary scholars use to describe and analyze these transformations. The field of media and communication studies have, for example, dealt with the affordances of phenomena such as audiobooks (Have and Pedersen 2013), blogging (Graves 2007), Facebook and YouTube (Halpern and Gibbs 2013; Simonsen 2011), mobile messaging (Reid and Reid 2010) and phones (Chan 2013; Helles 2013), news websites (Engebretsen 2006; Kammer 2013), PDAs (Churchill and Churchill 2008), and radio (Dubber 2013), just to name some. So, while the concept was originally introduced in order to establish a perception-psychological framework for analyzing living beings' possibilities for interaction with their environments (Gibson 1977, 1979), it has now become a prevalent one for conceptualizing, analyzing, and explaining the characteristics of new media technologies.

A keyword query illustrates the development in popularity of the concept: a search for the term "affordance" in the Social Sciences & Humanities section of the Scopus database of academic publishing (a section with more than 5,300 academic journals in it) returns 2,495 publications in the time period from 1977, where James J. Gibson first used the term, through 2014. As Fig. 1 shows, the use accelerated around the turn of the millennium where digitalization began to permeate all sections of society and communication. The obvious explanation for this historic convergence would be that this surge in use follows the proliferation of new (digital) technologies and the need for a vocabulary to make sense of them that follows from it. Even so, the term still "lacks a clear definition in the communication and media studies literature" (Nagy and Neff 2015: 1), and that puts obstacles in the way for researching it empirically.

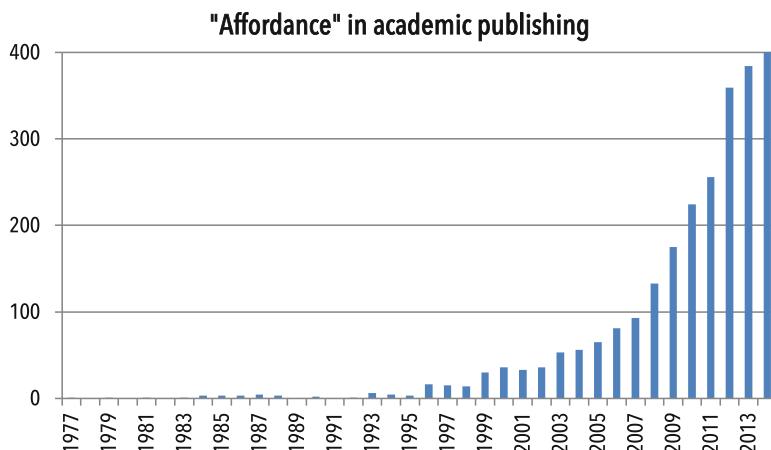


Fig. 1 The term "affordance" in academic publishing (1977–2014). n = 2495. (Source: Scopus, Social Sciences & Humanities section)

Against this background, the aim of this chapter is twofold. First, it provides a conceptual overview and discussion of the very concept of affordances, outlining the most important positions in its history. Second, the chapter proposes a methodological procedure for measuring the use of affordances across specific communicative, organizational, or institutional contexts. While the concept of affordances has proven its worth and usefulness in connection with clarifying the characteristics of artifacts and media technologies and with qualitative analysis of particular cases, its application in quantitative research remains limited because of its highly situated character (see, however, examples such as Engebretsen 2006; Kammer 2013). In parallel, the chapter presents an empirical study to illustrate the theoretical points and the proposed methodology; this study, like the rest of the chapter, builds upon previous research by the author (presented in Kammer 2013).

The Concept of Affordances

So what is an affordance?

The term “affordance” is a relatively new one as it did not exist in the English language until the late 1970s, where Gibson (1977, 1979) introduced it to describe the possibilities for action that an environment or artifact offer a living being. In his definition, the “*affordances* of the environment is what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill” (Gibson 1979: 127, emphasis in original). This conceptualization of affordances builds upon a perception-psychological premise since sensory input in the form of visual cues play a most important part of the construction of affordances – it is on the basis of seeing things that actors cognitively assess what they can (not) use them for. So, affordances are simultaneously real and perceived (see also Chemero 2003). On the one hand, affordances are real in the sense that they are grounded in the materiality of the artifact in question; a tree, for example, does not afford playing video games even if some actor wants to use it for that purpose. On the other hand, affordances are also matters of perception in the sense that the actor must recognize the artifact and what it offers before the affordances come into existence and can be utilized; the possibility for climbing up that same tree does not do much good if the actor does not realize that she, he, or it can actually climb it.

A most important though sometimes neglected conceptual dimension of affordances is their relational character, in that an affordance comes into existence in the relation between something (that has certain properties) and someone (who has certain motivations for and abilities to conduct certain actions). Artifacts have certain properties in and of themselves, but these properties should not be mistaken for affordances, since they exist regardless of who wants to utilize them for what. This relational character is what distinguishes the concept of affordances from, for example, Brügger’s (2002) concept of “mediacy.” Affordances, when it comes to communication research, and mediacy are alike in their focus on what (media) technology can and offers, but while the former constitute itself in the relationship

between the artifact and an actor, mediacy refers to inherent properties of the medium, which the actor may or may not have motivations and abilities to use.

There are two aspects to mediacy, namely potentialities and actualities. Potentialities, on the one hand, refer to that which the medium can do or can be used for; actualities, on the other hand, refer to that which it is actually used for. With this focus on the possibilities for action that the medium offers, mediacy as a concept is obviously related to that of affordances and shares its interest in how something enables some kind of action. The difference between the two, however, exists in the way that the concept of mediacy does not take into consideration how different actors may employ different motivations in their interaction with the technology and its potentialities. The concept of mediacy proposes that the medium comes with a fixed set of properties (potentialities) that can either be put into use (and become actualities) or ignored, but it is less sensitive to how different types of actors will have different motivations, intentions, and abilities for using the medium; as Helles emphasizes, “when we speak of affordances, it primarily concerns what is possible – not what *must* happen” (Helles 2009: 15, translated by the author, emphasis in original). Affordances represent invitations to act, not determinations.

Conceptual Developments

About a decade after the introduction of affordances as a concept, Norman (1988) conducted an early and important conceptual effort in advancing the theory as he applied it to the design of everyday things. So, he used Gibson’s basic idea of affordances as a key to explain how ordinary objects such as handles on jugs and doors influence users’ perception and subsequent use of the artifacts. Doing so, he argued that engineered artifacts can do the same as natural objects, but also that they are something one can manipulate in order to pursue certain goals. This way, an affordance constitutes an invitation to conduct a specific action. Like Gibson’s, Norman’s understanding of affordances is guided by an ambition to explain how living beings navigate their environments, but an important difference exists in their fundamental approach to the concept. Being interested in design and in explaining why some designs of everyday things prove successful while others fail, Norman is preoccupied with perceived affordances and with how the (learned) way actors see things influence their interactions with them (see also Norman 1999).

A more fundamental but equally influential rethinking, however, is presented by Hutchby (Hutchby 2001a, b), who situates affordances within communication research. While Gibson focuses on how living beings cognitively process sensory input of the visual kind, and Norman considers the implications of design on human agency, Hutchby proposes affordances as a “third way” that mediates the strengths and weaknesses of the conflicting positions of technological determinism and the social construction of technology paradigm. These two paradigms have been highly popular, but also mutually exclusive, in explaining the shaping relationship between

technology and the social (see also Nagy and Neff 2015); the former stipulates that the characteristics and properties of technology establish how human actors use it, and the latter asserts that human agency is what construct technology in the first place and should therefore have primacy.

What Hutchby proposes, drawing critically upon parts of the social constructivist framework, is that technologies are like texts in the sense that they can be “read” and “interpreted.” These interpretations constitute what the artifact in question affords the actor, and just as texts can be read in various ways, artifacts offer different possibilities for action to different actors. This way, the affordances of artifacts depend upon which actors use the artifacts and what they wish to use them for, adding emphasis to the relational character of the concept. But again, affordances are both perceived and real; while they rely upon the actor’s interpretation of the artifact in question, they must also correspond with the actual materiality of it. The use of artifacts, and this is a most central point of Hutchby’s, is constrained by the configuration of the artifact. “Affordances may thus differ from species to species and from context to context. However, they cannot be seen as freely variables” (Hutchby 2001a: 26) because they will always be grounded in the actual, material design of the artifact. Specific media technologies have specific but not endless potentialities as part of their mediacy, to use Brügger’s (2002) terminology, and only the actions that can actually be done with the artifact can, indeed, be done. Rappert (2003), however, questions the ontological validity of this conceptualization of affordances, arguing that Hutchby represents an unfairly radical reading of the social construction of technology position in particular, and that he uses it to create a straw-man argument to position his own not very novel perspective against.

Pinch and Bijker’s (1984) concept of “interpretative flexibility” is a useful one in this context because it captures, on the one hand, how social actors challenge the design-based intentional use of artifacts by using it in all sorts of unintended and unexpected ways while, on the other hand, the characteristics and materiality constrain which uses are possible. “Interpretative flexibility” constitutes a conceptual measurement for embracing how “different social groups [can] have radically different interpretations of one technological artefact” (Pinch and Bijker 1984: 423). This idea, imported from the sociology of scientific knowledge, refers to the way people and social groups interpret technologies in different ways dependent on their backgrounds and motivations, and how some degree of consensual understanding gradually crystallizes; the interpretations of technology, however, remain grounded in the actual artifact since it is, in the first place, the artifact that is interpreted (see also MacKenzie and Wajcman 1999). Applying the idea of interpretative flexibility to media technologies brings one to the same place as with affordances in Hutchby’s conceptualization: within the possibilities of action certain object or technology offer, different social actors use media technologies differently and sometimes in different ways than intended. But they cannot do so beyond what the technology affords in the first place; a shortwave radio, for instance, cannot be used for receiving moving images the same way as a television set can because of its lack of both screen and cathode rays. So there are limits to interpretative flexibility.

Imagined Affordances

A more recent (and critical) contribution to the conceptual framework of affordances is the notion of “imagined affordances.” Formulated by Nagy and Neff (2015), this perspective asserts that the traditional positions on affordances within communications studies fail to take into account how social actors can themselves configure the (digital) technologies they use. Whereas a tree, for example, has a quite fixed set of properties in terms of shape, carrying capacity, surface, texture, etc., that actors can do something with, technology can be adjusted by its users through tweaks, hacks, updates, changes to settings, etc. So, the possibilities for action that digital technology affords are not only potentialities based in its materiality but also depend on the social actors’ own appropriation of the artifacts. This way, “The point is not solely what people think technology can do or what designers say technology can do, but what people *imagine* a tool is for” (Nagy and Neff 2015: 5, emphasis in original). Furthermore, Nagy and Neff find the established notion of affordances lacking when it comes to explaining how actors interact with algorithmic entities such as the Facebook News Feed and Google search results, which are simultaneously offered by the technology and the result of individual adjustments through reflexive agency and everyday use. In this context, their argument goes, the affordances of an artifact not only rest upon the real and perceived properties of the artifact and the motivations and abilities of the actor but also upon what the user of digital technology *imagines* the technology can be used for. The notion of imagined affordances constitutes a much-welcomed contribution to the theory of affordances that accommodates it to the digital technology that actors can manipulate themselves. Unlike analogue technology such as a reel-tape recorder, digital technology can be modified to serve different purposes.

Researching Affordances

Since affordances are constituted in the meeting between an artifact or environment and an actor that has certain motivations and abilities, it is a phenomenon that is situated in and thereby defined by concrete contexts and practices. One consequence of this condition is that the empirical research into affordances often assumes a qualitative character and examines specific instances of artifact-actor interactions. Further, the scholarly literature about affordances is often of a more theoretical persuasion, outlining what various technologies offer (e.g., Graves 2007; Helles 2013).

While the concept of affordances is a most useful one in connection with analyzing the characteristics of (media) technology and explaining why people interact with artifacts the way they do, measurements of the actualization of affordances across situations and with larger data-sets are more rare (see, however, Engebretsen 2006; Kammer 2013) even though their epistemological position allows for alternative insights into the relationship between social actors and

technology. With a humble ambition of sketching what is within this blank spot of media and communication research, this section of the chapter proposes a methodological framework for quantitatively researching the extent to which affordances are used in and across concrete contexts. It does not claim to be *the* way to approach this type of empirical issue, but it offers one procedure for measuring the use of affordances in a fashion that allows for statistical scrutiny, proposing a more generalizable approach to the concept as an analytical tool. For more qualitatively oriented purposes, several of the proposed steps can still serve as a measurement for rigorous and systematic empirical research of affordances.

Throughout this section, an earlier study conducted by the author (Kammer 2013) will be used as an example to illustrate the stages of the methodology and ground the abstract reflections in a concrete case. Part of a research project about online journalists' appropriation of digital technology, the study in case aimed at measuring the extent of use of the specific affordances of news websites. Furthermore, the study asked whether ownership and type of legacy medium (i.e., the type of medium the online news offering "descends" from; typically broadcast or newspaper) for the news websites constituted a significant factor in connection with the use or non-use of the affordances. The empirical material consists of 93 Danish news websites, which were coded synchronously on live websites by student assistants from February 8 through March 4, 2012; this work received financial support from the foundation Dagspressens Fond.

The proposed methodological procedure consists of three stages: identifying the affordances, operationalizing the affordances, and analyzing data. This structure of identifying and operationalizing concepts before using them to analyze data is fairly standard and does not in itself contribute very much to the existing toolbox of methodological procedures. The contribution, rather, exists in the translation of the inherently qualitative concept of affordances into a quantitative framework and the proposal of a stringent procedure for empirical work.

The first stage is to identify the affordances that are relevant for the study. As affordances exist in the relationship between artifacts with potentialities and actors with motivations and abilities, this stage consists of clarifying (1) which artifact the study concerns, (2) which actors the study concerns, and (3) which potentialities the artifact in question represents that (4) are relevant for the actors in question. All artifacts enable a large variety of actions, but they will not all be relevant to include since studies are guided by particular focuses and certain research questions (and if that is not the case, taking one step back and formulating informed research questions really ought to be the first stage of the process). There are different paths toward the identification of affordances, but the typical approach will be to go through literature reviews and/or interviews with and/or observations of the actors that the study is about in order to find out what they want to do and which resources they hold for doing so. The existing literature, statements from informants, and observations of practices represent three different kinds of data, but all three of them can answer the question they are supposed to. Further, the triangulation of several sources can, obviously, serve as a means to increase the validity and reliability of the research.

In the case of the example study, as the aim was to examine journalists' use of the affordances of news websites, the first step was to identify which potentialities of news websites were of interest and relevance for this particular body of actors. The existing literature on the intersection between journalism and digital technology suggests that there are four potentials of websites that journalists use in the presentation of news, namely instantaneity (often referred to as "immediacy;" see, however, Tomlinson 2007), multimodality (often referred to as "multimedia;" see, however, Deuze 2004), interactivity, and hypertextuality (see, among many others, Bardoel and Deuze 2001; Deuze 2003; Domingo 2005; Engebretsen 2006; Hall 2001; Hartley 2012; Newhagen and Rafaeli 1996; Salaverría 2005; Steensen 2011; Zamith 2008). So, the literature review suggested a number of phenomena that constituted the group of affordances relevant for this study. However, in order to increase the validity of the study, interviews with a number of news workers were conducted. These interviews confirmed that the four initially identified potentials did, indeed, correspond with the motivations of the practitioners' work with web-based journalism; that is, news workers as a category of social actors had the motivation for using this particular technology in specific ways. The point is that the four identified potentials do not include all potentialities of digital media (see, e.g., Baym 2010, and Finnemann 2005, for more comprehensive overviews), but that they, rather, represent specifically the dimensions of the technology in question that were relevant for the specific type of actors in their use of the technology.

The second stage of the proposed methodology has to do with operationalizing the affordances identified in the first stage by breaking them down into measurable variables. While affordances can be highly useful for contemplating the nature or concrete characteristics of an artifact, they remain theoretical abstracts that will often be difficult to apply in an analytical context in and of themselves. This condition is particularly prominent for quantitative analysis, which will normally trade context-specificity for generalizability. So, the aim of this second stage is to translate the abstraction of affordances into tangible, measurable variables that can be applied analytically to empirical data-sets; this way, this stage is about developing measurements in the form of a coding manual for operationalizing the abstracts that the affordances constitute.

The means for turning the abstractions of affordances into operational measurement-variables may be heterogeneous and consist of theoretical as well as analytical procedures. If primarily theoretical, the process of operationalizing consists of reviewing the existing literature, synthesizing what others have written about the subject matter. More analytical approaches to this stage may include observation studies of actual use of the artifact that can outline the space of possibilities; here, as well, interviews with practitioners or specialists in the field can furthermore provide valuable and useful insights and increase the validity, reliability, and generalizability of the research.

In the example study, this second stage resulted in the four affordances of news websites being broken down into 27 variables (see Table 1). Each of these 27 variables represents phenomena that can be manifest formal features on news websites

Table 1 The measurable variables of the affordances of news websites. (Source: Kammer 2013: 102)

Affordances	Variables
Instantaneity	Breaking news Live updates List of latest news Time mark on referral on front page Time mark on article Updated article
Multimodality	Image Gallery Animation/graphics Video Sound Radio E-paper
Interactivity	Sharing by email Sharing on social medium Comments Audience-authored articles Reader blog Automated contact possibility (for reaching journalist) Poll
Hypertextuality	Internal link External link Tags Embedded map Embedded feed from social medium Embedded audiovisual content RSS

(or could, at least, at the time of the study, which should serve as a reminder that affordances are also situated temporarily and change over time). In order to create a systematics for recording the features and make that recording useful for subsequent statistical analysis, each variable was subjected to binary coding: it was coded as either “in use” (and assigned the numerical value 1) or “not in use” (and kept the numerical value 0, which it would have until found on the news website). The coders then systematically sifted through the top-two layers of the 93 news websites in search for examples of the variables in use. This stage in the procedure draws upon the method of content analysis as it is “*a research technique for the objective, systematic, and quantitative description of the manifest content of communication*” (Berelson 1954: 489, emphasis in original). The content analytical approach constitutes a systematics for analyzing the same variables across a large number of entities, and “Beyond ‘content’ in the narrow sense of ‘representation’, the approach also lends itself to systematic studies of the formal features of media” (Jensen and Helles

2005: 101). For more qualitative studies, the list of variables can function as a heuristic overview of phenomena to look for in the analysis.

The third stage of the proposed methodology concerns the analysis of the data that the content analytical gathering in the second stage generated, allowing for quantitative or qualitative examinations of how much (or just how) the affordances are in use. While the two previous stages have focused on developing a framework for analysis and an operationalization and systematics for data collection, this third one is where the actual analysis occurs. There can be various approaches, both quantitative and qualitative, to this analytical part of the process.

In the example study, the binary coding enables the calculation of what one might call an “affordance score.” The affordance score is a measurement for the extent to which a specific affordance is in use across the analyzed entities and is reported on a scale from 0 to 1; 0 means that no variables of the affordance in question were identified in use on any of the analyzed entities, while 1 means that all variables were in use on all of them. So, for example, an affordance score of 0.567 means that in 56.7% of the possible “in use” coding situations, the variables were actually found in use.

Tables 2 and 3 are examples of how this affordance score can be used for hypothesis testing and reporting results.

Table 2 presents the data on the relationship between ownership and the use of the affordances of news websites, which was a central point of interest in the example study. The most important finding concerning the relationship between ownership and the use of affordances is that the news websites from both the large Danish and international publishing corporations score higher across all of the four affordances than news websites with any other kind of ownership (broadcasters, independent publishers, and private individuals). In comparison to the mean, news websites with

Table 2 Ownership and affordance scores

	Instantaneity	Multimodality	Interactivity	Hypertextuality
Large Danish publishing organizations (<i>n</i> = 20)	.567	.686	.657	.607
Large international publishing organizations (<i>n</i> = 16)	.552	.589	.732	.732
Broadcasting corporations (<i>n</i> = 20)	.550	.564	.507	.507
Other/independent publishing organizations (<i>n</i> = 33)	.374	.506	.333	.403
Private individuals (<i>n</i> = 4)*	.208	.393	.107	.321
Mean	.477	.567	.499	.522

a = less than 5. Gray areas = values are above the means

Table 3 Legacy media and affordance scores

	Instantaneity	Multimodality	Interactivity	Hypertextuality
Printed news-paper (<i>n</i> = 69)	.459	.576	.507	.524
Broadcast (<i>n</i> = 21)	.540	.551	.483	.490
None (/web) (<i>n</i> = 3)*	.444	.476	.429	.714
Mean	.477	.567	.499	.522

a = less than 5. Gray areas = values are above the means

these types of ownership are the only ones above average, while broadcasting corporations' use of both instantaneity and interactivity is also above the mean. This finding suggests that large-scale organizations within the newspaper industry were generally more likely to use the affordances of news websites. Furthermore, news websites owned by private individuals score lowest on each affordance and are, accordingly, least likely to put them into use. News websites from broadcasting corporations use the different affordances to an extent quite close to the overall mean, while the smaller, independent publishing organizations are well below the mean for all affordances. Testing the statistical significance of these relationships, a Kruskal-Wallis test leads to the rejection of the null hypothesis, indicating that the correlation between ownership and the use of affordances is indeed significant ($H = 16.64$; $df = 4$; $p < 0.005$).

Whereas the cross-tabulation between ownership and the use of affordances identified noteworthy differences between the types of news websites, the relationship between the legacy medium of the news websites and their use of the affordances is much more consistent. As Table 3 shows, all scores, except for one, within each of the affordances vary by a maximum of 0.1. The only exception is the affordance of hypertextuality, where news websites without a legacy medium (digital pure-players) score remarkably higher than news websites from organizations rooted in offline news dissemination; the number of news websites without a legacy medium in the sample, however, is too low for this result to be statistically significant ($n < 5$). Also, the Kruskal-Wallis test failed to reject the null hypothesis, indicating that the correlation between legacy medium and the use of affordances is not significant ($H = 1.42$; $df = 2$; $p > 0.2$). So while ownership proved to matter for the use of affordances, this study cannot confirm that type of legacy medium does too.

Closing Remark

In an age of profound technological changes, the need for scholars to have a vocabulary for describing, characterizing, and analyzing artifacts and technology has become increasingly urgent. For researchers of “the digital,” the concept of affordances has proved a valuable component of that vocabulary. However, as the

outline in this chapter shows, the concept is one that is subject to continuous developments and renegotiations through the scholarly conversation, even if the conceptual core of it, what is at the heart of the idea of “affordances,” remains relatively stable. That said, there is a need for expanding the array of methodological approaches to researching empirically the actual use of affordances – a need this chapter hopes to contribute to.

References

- Bardoel J, Deuze M (2001) Network journalism: converging competences of media professionals and professionalism. *Aust J Rev* 23(2):91–103
- Baym NK (2010) Personal connections in the digital age. Polity Press, Cambridge
- Berelson B (1954) Content analysis. In: Lindzey G (ed) *Handbook of social psychology*, volume I: theory and method. Addison-Wesley Publishing Company, Cambridge
- Brügger N (2002) Theoretical reflections on media and media history. In: Brügger N, Kolstrup S (eds) *Media history. theories, methods, analysis*. Aarhus University Press, Aarhus
- Chan M (2013) Mobile phones and the good life: examining the relationships among mobile use, social capital and subjective well-being. *New Media Soc* 17(1):96–113. <https://doi.org/10.1177/1461444813516836>
- Chemero A (2003) An outline of a theory of affordances. *Ecol Psychol* 15(2):181–195. https://doi.org/10.1207/S15326969ECO1502_5
- Churchill D, Churchill N (2008) Educational affordances of PDAs: a study of a teacher’s exploration of this technology. *Comput Educ* 50(4):1439–1450. <https://doi.org/10.1016/j.compedu.2007.01.002>
- Deuze M (2003) The web and its journalisms: considering the consequences of different types of newsmedia online. *New Media Soc* 5(2):203–230
- Deuze M (2004) What is multimedia journalism? *Journal Stud* 5(2):139–152
- Domingo D (2005) The difficult shift from utopia to realism in the Internet era. A decade of online journalism research: theories, methodologies, results and challenges. Presented at the first European communication conference
- Dubber A (2013) Radio in the digital age. Polity, Cambridge
- Engebretsen M (2006) Shallow and static or deep and dynamic? *Nord Rev* 27(1):3–16
- Finnemann NO (2005) The cultural grammar of the internet. In: Jensen KB (ed) *Interface://culture – the world wide web as political resource and aesthetic form*. Samfundsletteratur, Frederiksberg, pp 52–71
- Gibson JJ (1977) The theory of affordances. In: Shaw R, Bransford J (eds) *Perceiving, acting, and knowing. Towards an ecological psychology*. Lawrence Erlbaum Associates, Hillsdale, pp 67–82
- Gibson JJ (1979) The ecological approach to visual perception. Houghton Mifflin Company, Boston
- Graves L (2007) The affordances of blogging. *J Commun Inq* 31(4):331–346. <https://doi.org/10.1177/0196859907305446>
- Hall J (2001) Online journalism. A critical primer. Pluto Press, London
- Halpern D, Gibbs J (2013) Social media as a catalyst for online deliberation? Exploring the affordances of Facebook and YouTube for political expression. *Comput Hum Behav* 29 (3):1159–1168. <https://doi.org/10.1016/j.chb.2012.10.008>
- Hartley JM (2012) *Nyheder på internettet*. Handelshøjskolens Forlag, København
- Have I, Pedersen BS (2013) Sonic mediatization of the book: affordances of the audiobook. *MedieKultur* 54:123–140
- Helles R (2009) Personlige medier i hverdagslivet. University of Copenhagen, Copenhagen

- Helles R (2013) Mobile communication and intermediality. *Mobile Media & Commun* 1(1):14–19. <https://doi.org/10.1177/2050157912459496>
- Hutchby I (2001a) Conversation and technology. From the telephone to the internet. Polity Press, Cambridge
- Hutchby I (2001b) Technologies, texts and affordances. *Sociology* 35(2):441–456
- Jensen KB, Helles R (2005) “Who do you think we are?” A content analysis of websites as participatory resources for politics, business, and civil society. In: Jensen KB (ed) *Interface:// culture – the world wide web as political resource and aesthetic form*. Samfunds litteratur, Frederiksberg
- Kammer A (2013) News on the web: instantaneity, multimodality, interactivity, and hypertextuality on Danish news websites. University of Copenhagen, Copenhagen
- MacKenzie D, Wajcman J (1999) Introductory essay: the social shaping of technology. In: MacKenzie D, Wajcman J (eds) *The social shaping of technology*, 2nd edn. Open University Press, Maidenhead
- Nagy P, Neff G (2015) Imagined affordance: reconstructing a keyword for communication theory. *Social Media Soc* 1(2):1–9. <https://doi.org/10.1177/2056305115603385>
- Newhagen JE, Rafaeli S (1996) Why communication researchers should study the internet: a dialogue. *J Commun* 46(1):4–13. <https://doi.org/10.1111/j.1460-2466.1996.tb01458.x>
- Norman DA (1988) *The design of everyday things*. Basic Books, New York
- Norman DA (1999) Affordance, conventions, & design. *Interactions* 6(3):38–42
- Pinch TJ, Bijker WE (1984) The social construction of facts and artefacts: or how the sociology of science and the sociology of technology might benefit each other. *Soc Stud Sci* 14(3):399–441
- Rappert B (2003) Technologies, texts and possibilities: a reply to Hutchby. *Sociology* 37(3):565–580
- Reid FJM, Reid DJ (2010) The expressive and conversational affordances of mobile messaging. *Behav Inform Technol* 29(1):3–22. <https://doi.org/10.1080/01449290701497079>
- Salaverriá R (2005) An immature medium. Strengths and weaknesses of online newspapers on September 11. *Gazette* 67(1):69–86
- Simonsen TM (2011) Categorising YouTube. *MedieKultur* 51:72–93
- Steensen S (2011) Online journalism and the promises of new technology. A critical review and look ahead. *J Stud* 12(3):311–327
- Tomlinson J (2007) *The culture of speed. The coming of immediacy*. Sage Publications, Los Angeles
- Zamith F (2008) A methodological proposal to analyze the news websites use of the potentialities of the Internet. Presented at the 9th international symposium on online journalism. Retrieved from <http://online.journalism.utexas.edu/2008/papers/Zamith.pdf>



Telephone Interviewing as a Qualitative Methodology for Researching Cyberinfrastructure and Virtual Organizations

19

Kerk F. Kee and Andrew R. Schrock

Contents

Cyberinfrastructure Methodologies	353
Telephone Interviewing as a Methodology	354
Practical Challenges	354
Practical Benefits	355
Research Iterations	356
Study 1: TeraGrid	356
Studies 2 and 3: XSEDE	357
Interviewing Protocol	357
Recruit in Person or Online	357
Clarify Initial Uncertainty	358
Build Trust	358
Document Consent	359
Warm Up with a Biography	359
Customize Prescribed Questions	359
Free-Flow Narrative for Improvisation	360
Give in Return	360
Lessons Learned About Telephone Interviewing	360
Persuasion to Participate	361
Induced Richness	362
Improved Rapport	362
Neutralizing Assumed Privilege	362
Working Outside the Now	363
Conclusion	363
References	364

K. F. Kee (✉) · A. R. Schrock

School of Communication, Chapman University, Orange, CA, USA

e-mail: kerk.kee@gmail.com; kee@chapman.edu; schrock@chapman.edu; me@aschrock.com

Abstract

Cyberinfrastructure (CI) involves networked technologies, organizational practices, and human workers that enable computationally intensive, data-driven, and multidisciplinary collaborations on large-scale scientific problems. CI enables emerging forms of mediated relationships, dispersed groups, virtual organizations, and distributed communities. Researchers of CI often employ a limited set of methodologies such as trace data analysis and ethnography. In response, this chapter proposes a more flexible framework of interviewing members of dispersed groups, virtual organizations, and distributed communities whose work, interaction, and communication are primarily mediated by communication technologies. Telephone interviewing can yield high-quality data under appropriate conditions, making it a productive mode of data collection comparable to a face-to-face mode. The protocol described in this chapter for telephone interviews has been refined over three studies (total $N = 236$) and 10 years (2007–2017) of research. The protocol has been shown to be a flexible and effective way to collect qualitative data on practices, networks, projects, and biographical histories in the virtual CI communities under study. These benefits speak to a need in CI research to expand from case studies and sited ethnographies. Telephone interviewing is a valuable addition to the growing literature on CI methodologies. Furthermore, our framework can be used as a pedagogical tool for training students interested in qualitative research.

Keywords

Cyberinfrastructure · Technology · Qualitative · Interviews

Cyberinfrastructure (CI) is an assemblage that includes a national supercomputing network along with associated computational tools, sensors, datasets, practices, and scientific workers (Atkins et al. 2003; Kee et al. 2011; Ribes and Lee 2010). In other words, CI involves networked technologies, organizational practices, and human workers that enable computationally intensive, data-driven, and multidisciplinary collaborations on large-scale scientific problems. These scientific problems include ambitious discipline-specific projects such as mapping the genetic botanical DNA lineages (iPlant Collaborative) and improving cancer therapies (CyCore). A growing body of research has focused on the human side of CI: the individuals, teams, and organizations that coordinate and collaborate on CI projects (Lee et al. 2006; Ribes and Finholt 2008). The workers and practitioners involved in CI include scientists, technologists, administrators, funders, policy analysts, and industry experts. They collectively develop and implement a networked infrastructure for large-scale and big data science through various forms of mediated relationships, dispersed groups, virtual organizations, and distributed communities. Researchers of CI, although they generally approach it as a socio-technical assemblage, gravitate toward investigating human communication and organizational practices within the context of CI. Capturing this empirical richness is the methodological challenge this chapter takes up by describing and justifying the use of in-depth telephone interviews.

Cyberinfrastructure Methodologies

Social and organizational research of CI tends to be conducted ethnographically at the project level. However, Ribes and Lee (2010) note a need in CI research to move “beyond the project scale” and toward “treating CI as a holistic phenomenon” (p. 240). Given the large scope of CI, this has occurred most commonly within book length treatments that combine large-scale data analysis and case studies (Meyer and Schroeder 2015; Shrum et al. 2007). Achieving this level of empirical richness remains a challenge for article-length publications that have less room to make a long-form argument.

In addition to the technical infrastructure of CI, there are several motivations to research human infrastructure and move beyond the “project scale,” as Ribes and Lee suggest. CI involves mediated relationships, dispersed groups, virtual organizations, and distributed communities. Additionally, from an organizational perspective, communication processes tend to involve a combination of in-person and computer-mediated episodes (Browning et al. 2011). For example, a group of CI practitioners might meet in-person at a conference, then communicate over email about developing data standards, and meet again at another conference to continue the work. Individuals strategically use sequences of technologies at their disposal to maximize effectiveness of their communication and reduce overload (Stephens 2007a). Therefore, FTF interactions may only be transient and representative of a small part of the totality of communication interactions that constitute organizations.

Social and organizational researchers of CI have recognized there is often no one single geographical site to enter, since events that occur on-site represent only a fraction of all practices and collaborations. This stands as a challenge to ethnographic methods that currently dominate CI research. Although various interpretations of ethnography exist, they all involve a long period of on-site immersion to produce a full picture of the people and social world under investigation. Studying a single medium, event, institution, or interaction is unlikely to capture the full complexity of how CI develops and enables virtual organizing.

This chapter explores an alternative methodology that addresses the challenge of collecting qualitatively rich data in a timely fashion across multiple sites and diverse practitioners: telephone interviewing. More specifically, the purpose of this chapter is to explore strategies qualitative researchers can employ to recruit participants via emails and conduct effective telephone interviews to collect quality data. First, the chapter briefly defines interviewing as a methodology and describes its practical benefits. We rely on Rubin and Rubin’s (1995) definition of qualitative interviewing, which, “is a way of finding out what others feel and think about their worlds. Through qualitative interviews you can understand experiences and reconstruct events in which you did not participate” (p. 1). This can be effectively achieved via the telephone interviewing mode and, for many tasks, even offer advantages to dominant methodologies of researching CI, such as ethnography. Therefore, this chapter poses the research question: *How can members of dispersed groups, virtual organizations, and distributed communities be strategically recruited and effectively interviewed for understanding their work, interaction, and communication mediated*

by digital networks? Next, the (virtual) sites and interview sequence are described. Third, emergent advantages and lessons learned that came out of using telephone interviews are considered, before concluding by addressing some implications of this methodology.

Telephone Interviewing as a Methodology

Interviewing, as a qualitative methodology, can be traced back to the turn of the nineteenth century, when it was commonly used in anthropology and sociology (Travers 2009). Initial methods of interviewing and observing were developed based on conditions of early cultural communities and sociological phenomena. Communities emerged out of and existed in a single location, and members were collocated. Therefore, the primary mode of access to qualitatively study sociological phenomena was face-to-face (FTF) and extended direct contacts. Given these conditions, the qualitative tradition has tended to hold in higher regard research that involves long period of interaction and immersion to produce quality data and tacit understanding of the people and social world under investigation.

Interviewing became widely recognized in communication, sociology, and organizational science, where it remains a viable option for qualitative data collection (Lindlof 2002). During this time, the use of the telephone for interviewing was adopted in public opinion research and marketing. For example, conducting structured telephone interviews for surveys was popular for both just-in-time political polling and product research. However, the ways in which people communicate, form groups, organize, and develop communities, have evolved beyond the initial conditions. Sturges and Hanrahan (2004b) summarized that “the use of telephone interviews in qualitative research is uncommon” (p. 108). The reluctance of researchers to conduct semi-structured interviews, rather than structured opinion surveys, over the telephone may stem from a perception that the challenges outweigh the benefits and a move toward structured online surveys that can result in a larger overall sampling for lower cost.

Practical Challenges

Interviews rely on participant recall of perspectives, experiences, and events. Rubin and Rubin (1995) noted the affective and phenomenological dimensions of qualitative interviews, which intersect with traditional concerns of CI researchers. For example, challenges associated with telephone interviews include lack of non-verbal cues to facilitate the interviewing process (Harvey 2011; Holt 2010). Researchers are also concerned that participants are more likely to provide no-opinion and acquiescent responses over the telephone (Holbrook et al. 2003), there is limited contextual and ethnographic information for subsequent data analysis (Holt 2010; Shuy 2002), and respondents are more likely to provide no-opinion responses. However, similar to Sturges and Hanrahan (2004b), there was no

difference in quality between the in-person and telephone interviews collected when using a protocol that employed the steps described in this chapter to encourage faster development of rapport and interviewer-participant trust.

Practical Benefits

Despite the aforementioned challenges, telephone interviewing can be a cost-effective way to collect qualitative data from members of virtual communities on a variety of topics. These topics include their practices and routine with computer-supported cooperative work arrangements. This section briefly sketches the *practical* benefits of telephone interviews in research: time, flexibility, responsiveness, and data consistency.

Time is a critical concern of researchers studying CI. Gaining access and spending sufficient time at a site is arduous for interviewers, particularly when travel is needed (Stephens 2007b). If a qualitative researcher insists on an FTF interview, the result may be much fewer interviews and a lower response rate (Harvey 2011). Time is also a concern of participants. For example, the most common reason participants give for preferring a telephone-based interview over an in-person one is time (Sturges and Hanrahan 2004a). Time is also a theoretical concern of researchers who study CI because CI projects can take years to come to fruition and can have differing temporal dimensions (Karasti et al. 2010) that are a challenge to capture.

Telephone interviews have geographic *flexibility*. That is, because interviews conducted in person and on the telephone result in a similar quality of data (Kee and Browning 2010), they can be used to work around constraints to obtain a more geographically-diverse sampling. For research projects that involve participants at multiple geographical locations, it is often not financially feasible for a researcher to travel extensively for a qualitative study (Gratton and O'Donnell 2011). Telephone interviews also present a practical and cost-effective (Harvey 2011; Holt 2010) option that can be used alongside sited methodologies, much as ethnography often includes on-site interviews and collection of workplace documents.

Telephone interviews are *responsive* to participants' constraints and concerns. Offering the flexibility of selecting a time and place for an interview can increase participants' willingness to be interviewed, increasing response rates (Sturges and Hanrahan 2004a). Holt (2010) points out that when an unexpected interruption occurs during a scheduled interview, it is easier and more flexible to rearrange for another appointment. In a semi-structured format, participants can ask clarifying questions. These responses can then be refined and worked into the interview protocol, keeping with grounded theory's reflexive stance.

Finally, telephone interviews produce *consistent* data. Successive analyses can therefore "stay at the level of the text" (Holt 2010). In other words, the researcher can rely on what the participants share as the context from which to make analytical interpretations. This can still contribute to an appropriate depth of data when researching complex socio-technical phenomenon. These advantages suggest that the quality of interview data collected via the telephone may not be compromised.

simply because it is not FTF. Rather, in some situations, it may be superior to FTF interviews. To understand the broader benefits of telephone interviews and our research protocol, we will describe the iterations of our research projects. As noted above (Ribes and Lee 2010), researchers of CI are interested in moving beyond case studies and projects. Accordingly, this study draws on insights from three studies conducted between 2007 and 2017.

Research Iterations

Study 1 focused on a distributed community, TeraGrid, a supercomputing consortium funded by the US National Science Foundation (NSF). Studies 2 and 3 investigated XSEDE (Extreme Science and Engineering Discovery Environment), the successor of TeraGrid. Together, TeraGrid and XSEDE represent the largest supercomputing and big data science community in the USA during the first two decades of the twenty-first century, in which many NSF-funded CI projects and cases emerged. Therefore, by studying TeraGrid/XSEDE, the research moved to studying CI as a holistic phenomenon. In all three studies, the researchers conducted in-person ($N = 87$) and telephone ($N = 149$) interviews (Table 1). In-person interviews tended to be shorter; for example, in Study 3, the average length of in-person interviews was 25:08 min, while telephone interviews averaged 45:28 min.

Study 1: TeraGrid

TeraGrid was the largest CI distributed community during the initial establishment of NSF's Office of Cyberinfrastructure (OCI, which was reinvented as the Division of Advanced Cyberinfrastructure and now the Office of Advanced Cyberinfrastructure). TeraGrid was funded between 2001 and 2011. It involved a range of professionals located at 11 partner sites at universities, supercomputing centers, and national laboratories across the USA. TeraGrid was led by a "Grid Infrastructure Group," which consisted of representatives from all the partner sites, as well as working groups of specialists who collaborated with colleagues from other sites on different key issues related to the TeraGrid.

Members of TeraGrid primarily belonged to different institutions across the USA. They were also funded by the NSF OCI to work collaboratively on overlapping funding allocations. From its inception, TeraGrid existed as a virtual organization and/or distributed community with its members working with each other via a mix of

Table 1 Interview format by origin for recruitment

Recruitment site	Telephone interviews	In-person interviews
1. TeraGrid (2007–2010)	48	18
2. XSEDE (2013–2016)	38	60
3. XSEDE (2016–2017)	63	9

in-person meetings, annual conferences, teleconferences, telephones, and the Internet. Given its inherent distributed nature, it made a suitable vehicle for testing the benefits of semi-structure telephone interviews for researching CI.

Interviews were conducted for TeraGrid over a period of 32 months from November 2007 to June 2010. This period represents the mature stage of TeraGrid. The dataset includes 70 interviews with 66 participants from across 17 US states and 3 other countries. The few non-US interviews were conducted to provide contrasts to frame the US case in the study. The interviews were spread across 4 years with 10 participants in 2007, 42 in 2008, 16 in 2009, and 2 in 2010. The interviews averaged approximately one hour each and were conducted in-person with 19 of the participants and over the telephone with the remaining 51 participants.

Studies 2 and 3: XSEDE

XSEDE was the successor to TeraGrid. Since 2011, it has continued as a distributed community that supports CI projects across the USA (Kee [2017](#)). Thus, the general scope of XSEDE resembled that of TeraGrid with additional support. CI practitioners attend and present at a yearly XSEDE conference.

Interviews were conducted for Study 2 on XSEDE and involved 98 participants from 25 different states and 4 countries between November 2013 and July 2016. Interviews for Study 3 started in March 2016, and it is an active project at the time of the writing of this handbook chapter. As of the date of writing this chapter, there have been 70 interviews obtained from participants in 27 different states.

Interviewing Protocol

The interview process involved an intentional sequence that allows for improvisations, beginning with recruitment:

Recruit in Person or Online

Researchers of CI select a sampling method that matches with their empirical goals. They may want to seek representative coverage, as in a quantitative social scientific paradigm. Qualitative researchers decide to end data collection when they achieve saturation in responses (Lindlof [2002](#)). However, a sample cannot be biased toward a particular network, unless that is the explicit goal. The 3 studies in Table 1 obtained a saturation of data for our research questions. Recruiting was performed from in-person meetings and online lists of contacts, leading into a snowball sampling (Kerlinger and Lee [1999](#)) with a maximum variation approach (Baxter and Babbie [2003](#)).

Study 1 conducted in-person interviews via convenience sampling as circumstances allowed at one of the main participating sites of TeraGrid. Participants were

then asked to recommend peers that might be interested in an interview (snowball sampling). In order to reduce biases and improve diversity, recommenders were asked to suggest peers who are professionally and demographically different from themselves. Studies 2 and 3 transitioned to random sampling from a list of XSEDE conference attendees, who were also asked to recommend participants. Recruitment was still performed over email, leading into a snowball sample similar to Study 1. Emails described the study and what participation would entail, along with a list of potential times to perform the telephone interview. The following procedure applies only to the telephone interviews.

Clarify Initial Uncertainty

Given that recruitment included a series of emails that explained the purpose prior to the telephone call, there was no additional overview of the study in the interviews provided unless the participant asked. A consent form with additional information was always signed and returned prior to the interviews. By the time the participant and interviewer talked on the telephone, they already were well informed and had a good understanding of the scope of the interview.

The conversation started with giving the participant an opportunity to ask any questions about the interview. Interviewers would usually say, “Before we begin, do you have any questions about the interview today?” If participants wanted an overview to refresh their memory, interviewers would then provide one. If they wanted to know how the interview would be used, interviewers would then address that issue.

Giving participants an opportunity to ask clarifying questions in the beginning gave them a sense of control over the interview and provided an opportunity to build rapport. As Shuy (2002) explained, “When interviewers permit respondents to participate in setting the agenda, to ask questions, and to change the direction of things, they surrender personal power and help to distribute power more equally between the participants” (p. 550). Interviewers regularly fielded questions about how interviews would be used and also about funding for the project.

Build Trust

Groves and Kahn (1980) recommended that “the first few moments of the interaction should be designed to request no information but rather to attempt to develop trust of the interviewer by the respondent” (p. 204). In order to build trust further, the interviewer would say, “Can I have your permission to put you on speakerphone and turn on the audio recorder?” This signaled to the participant that they would be informed of every step to be taken during the interview. This gave them a sense of control, and it also increased trust.

Document Consent

Consent is an important part of adhering to ethical practices and requirements of Institutional Review Boards (IRBs). Therefore, interviewers made sure that verbal consent was documented during the interview in addition to ensuring participants signed the consent form. Once the audio recorder was turned on, they would continue, “[Name of the participant], you are now on speakerphone and the audio recorder is running, can you hear me alright?” Participants’ response indicated that they were aware of being audio recorded and that they were agreeing to it. In addition to verbal consent, the interviewer also retained a copy of all email exchanges as additional evidence of consent to participate.

Warm Up with a Biography

Since this was the first synchronous interaction between two strangers, the warm-up exercise encouraged the participant to provide his/her biography. This activity relaxed the participant and built trust between them and the interviewer. Biographies as a warm-up prompt were effective as a strategy to start the interview, to build trust, and to set the stage for more disclosure. They also provided information for improvisation and customization. Finally, how much participants shared their biographies also gave us a sense of how they would respond to our interview questions with details, preparing us for the need to probe deeper.

Customize Prescribed Questions

Interviewers prescribed interview questions about CI development (i.e., coproduction between scientists as users and technologists as developers), adoption (i.e., reasons and rationales for using the infrastructure), implementation (i.e., distributed collaboration and virtual organization among small groups and interconnected groups of scientists via CI), definition (i.e., explanation, metaphors, and analogies), history, and future visions for CI. However, not every question applied to every participant. With their biographies in mind, interviewers were able to improvise, customize, and personalize the interviews based on their unique backgrounds and experiences.

When time was limited (e.g., a couple of participants had only about 15–20 min each for the interview), interviewers were able to select the questions to prioritize, drop, and pursue. Furthermore, customizing prescribed questions based on biographies allowed us to show our attentiveness to the conversation and to discover what was salient about their identity at work at the moment. If time allowed, interviewers later pursued less pertinent issues. Having heard their biographies also prevented us from asking uninformed questions due to a lack of knowledge of a participant’s background.

Free-Flow Narrative for Improvisation

An important strength of qualitative interviews is the potential for serendipity. A highly structured interview may be efficient, but it may miss interesting insights. In grounded theory (Glaser and Strauss 1967), an investigation is guided by questions that make room for improvisation and adaptation. Shuy (2002) suggested that, “if the goal is to probe deeply and to elicit thoughtful answers, then interviewers’ letting respondents self-generate whatever is on their minds is superior to having probes controlled by a standardized set of questions” (p. 552).

In order to increase the likelihood of serendipity and elicit thoughtful insights, interviewers built in an opportunity for free-flowing narrative. When interviewers say, “We have covered a lot of issues in this interview. Before we wrap up, were there questions or issues you thought might come up during the interview, that didn’t?” This question usually prompted participants to talk about what they thought might be relevant (if they had given some thought to the interview beforehand) or to answer their own questions about CI. They often offered interesting insights that otherwise would have been left out by a prescribed protocol.

For example, two participants talked about tensions and conflicts between groups of scientists in the process of cyberinfrastructure development only after the interviewer started wrapping up the interviews. However, these tensions and conflicts were strong and powerful in these interviews that they prompted a careful analysis of the entire dataset in Study 1. As a result, a hidden theme in the dataset surfaced after the interviewer had been enlightened by the participants. The result also led to a publication subsequently (see Kee and Browning 2010).

Give in Return

Before concluding the interviews, the interviewer thanked the participants for their time and insights. Furthermore, the interviewer also offered to share our research findings when the project is complete, giving our anticipated project completion date. Because the interviewer offered to give something back in return, participants often felt appreciated for their efforts. This promise of reciprocation, although a couple of years in the future at the time the interviews were conducted, helped further strengthen the trust that was established beginning with the first email invitation and culminating in the interview.

Lessons Learned About Telephone Interviewing

During the 10 years, our research team came to appreciate several benefits of telephone interviewing for studying CI as a socio-technical phenomenon. Recently, Tracy et al. (2014) suggested, “we would like to see all qualitative researchers spend

a bit more space—if only several sentences—sharing ‘backstage’ moments in their publications so this insight need not be relegated to forums or separate confessional tales” (p. 427). In this spirit, this chapter presents strategies proposed in the context of a study, sharing our “backstage” decisions and rationales, including those prompted by participants’ emails. Furthermore, by sharing the organizational context and case in which the proposed framework was developed, this chapter highlights what Brummans (2014) terms the “situatedness” (p. 444) of research and knowledge in organizational communication scholarship. Reflecting on our experiences, the team feels these benefits of telephone interviewing reach beyond the practical benefits described in the introduction and addressed social and organizational researchers of CI’s interest in qualitative depth of response and transcendence of work environments.

Persuasion to Participate

Recruitment for interviews presents a challenge. Interviewers want to ensure objective responses. However, maximizing the number of positive responses to invitations is in the best interest of a research project. Therefore, the goal of an invitation is for a potential participant to respond, agree, and commit to an interview. In our snowball sampling, interviewers obtained three names, in cases the previous participants provided them, at the end of each interview. Sociology has long held that homophily is a powerful force that cements social relationships (McPherson et al. 2001). Potential participants were more likely to be interviewed if they knew interviewers had an *association* with a colleague. Persuasion by *trust* is the assurance that the interviewer will not misuse information. It can be established by institutional affiliation and offering personal information about the interviewers. Persuasion by *identity* was also important. Interviewers personalized invitations using a Google search on every new contact before sending him/her an email invitation. In the invitation email, addressed appropriately with their titles, interviewers emphasized an aspect of our studies that related the most to them.

Finally, persuasion by sequence refers to strategically sequencing communication to induce a greater likelihood of participation. Using a foot-in-the-door and Cialdini’s (2009) principle of consistency, our team recognized that persuasion is a sequence and not a single act. The first invitation email was to get a new contact to respond and agree to be interviewed. The reminder email prior to the phone call was to persuade a new contact to allow audio recording. Interviewers did not want to request audio recording in the first email because digital documentation may make some new contacts uncomfortable before trust has been established. After several email exchanges, and when interviewers sensed that trust has been established, they extended the audio recording request while making it optional. Among the 70 interviews conducted in Study 1, there was only one instance when an informant requested not to be audio recorded.

Induced Richness

Nonverbal responses are limited during a telephone interview (Stephens 2007b), and people who live in western cultures are generally uncomfortable with silence (Chen 1997; Hall 1989; Newman 1982). Leveraging this observation, Berry (2002) suggested that the telephone mode can be used to create a productive tension that leads to more detailed answers. Furthermore, Holt (2010) explained that the lack of nonverbal cues makes both the participant and the interviewer tend to perform full articulation, which produces richer text for subsequent analysis. That is, meanings that would be communicated through nonverbal cues in an in-person setting are explicitly included in the interview conversations, leading to richer data for subsequent analysis. In telephone interviews, participants described facets of their biography in greater detail than they might in a naturalistic ethnographic setting where the facets become taken for granted.

Improved Rapport

Scholars of mediated communication have long noted that a lack of visual cues can lead to more rapid development of trust (Walther 1996). Studies that use the telephone mode can create anonymity and psychological distance that makes the participants feel more comfortable with disclosing sensitive information. That is, they may feel less judged by researcher in their work settings – what Holt (2010) referred to as the “professional gaze” (p. 115). Some participants are more comfortable with the increased sense of anonymity during a telephone interview (Greenfield et al. 2000). As Fenig et al. (1993) argued, “partial anonymity granted by the telephone may increase the validity of responses by reducing the embarrassment involved in responding to emotionally or socially loaded questions in a face-to-face situation” (p. 1). In the context of CI research, this took the form of participants being candid about constraints they faced in current and/or previous workplaces. These were facets of work life that participants were be reluctant to disclose, but are valuable to study.

Neutralizing Assumed Privilege

Within a social research setting, there are demographic variables such as race, ethnicity, age, socioeconomic class, and different abilities that could induce undesirable power relations between the participant and the interviewer. For example, Sturges and Hanrahan (2004a) reported a study involving family members of jail inmates who came from marginalized segment of society (as compared with the interviewer). In our Studies 2 and 3, young undergraduate research assistants on the team conducted some interviews with senior administrators. In a telephone interview, some of these demographic variables may not be obvious and/or prominent. Having the interviews mediated by the telephone can better neutralize the conversational space for both the participant and the interviewer.

Working Outside the Now

The “now” can be a valuable way to retrospectively reflect on meaningful practices and pivotal events that occurred naturally in the workplace. However, many questions about CI are naturally longitudinal (Karasti et al. 2010). Telephone interviews can encourage participants to expand on aspects of CI invisible to episodic ethnography and cross-sectional surveys. Participants told stories about key moments in their personal histories and how these moments built up to impact them in the current day. For example, an African-American woman participant in Study 3 discussed her participation in CI since the early 1970s. Her interview was not just about how she became involved with CI – it was a lens on her subsequent efforts to involve institutions through diversity outreach in subsequent decades. The interviewer was able to recognize her unique contribution to CI and ask follow-up questions to encourage her to elaborate on specific influential events outside the now.

Conclusion

This chapter has presented telephone interviewing as a viable alternative to dominant methodologies for researching cyberinfrastructure. Telephone interviews have distinct practical, social, and cultural advantages. They can result in high-quality data on practices and collaborations in socio-technical systems such as CI. That is, when practiced appropriately under the right circumstances, the telephone mode could yield better quality data or data that otherwise cannot be easily obtained. In order to systematically assess if the data collected via the telephone and the research analysis based on telephone interviews are of rigorous standard, Tracy’s (2010) eight “Big-Tent” criteria are helpful to guide qualitative research. She argues that in order to be deemed excellent qualitative research, a study needs to demonstrate: worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence.

Interview data have been shown to be appropriate for grounded theory analysis and content analysis using coding software such as NVivo, ATLAS.ti, and MAXQDA. Given the steady development of CI in the domain of big data science and the rapid development of information and communication technologies in societies across the world, researchers will continue to witness the emergence of a plethora of mediated relationships, dispersed groups, virtual organizations, and distributed communities for research. Telephone interviewing can also be used as a supplement to more traditional methods of ethnography, surveys, and even trace data analysis. The protocol described in this chapter provides a framework that researchers can adopt and adapt into their methodologies for researching a variety of socio-technical phenomena.

Finally, this framework can be used for pedagogical purposes. In other words, for students learning how to conduct qualitative interviews for the first time, the persuasion principles and telephone interview protocol presented could be used as an initial guide, adapted appropriately to the goals of the qualitative methods

professors of individual classes, especially if the project involves studying distributed communities who are comfortable with using a range of communication technologies. In fact, “there is no common procedure for interview research. Interview research . . . if well carried out, can become an art” (Kvale 1996). This framework is not intended as a strict guide, but a starting point for furthering the art of qualitative interviewing.

Acknowledgments The authors thank Larry Browning for his support and early contribution to Study 1 documented in this chapter. Studies 2 and 3 are funded by NSF ACI 1322305 and NSF ACI 1453864 respectively

References

- Atkins DE et al (2003) Revolutionizing science and engineering through cyberinfrastructure: report of the National Science Foundation Blue-Ribbon Advisory Panel on cyberinfrastructure. National Science Foundation, Washington, DC
- Baxter LA, Babbie ER (2003) The basics of communication research. Wadsworth, Belmont
- Berry JM (2002) Validity and reliability issues in elite interviewing. PS 35:679–682
- Browning LD, Morris GH, Kee KF (2011) The role of communication in positive organizational scholarship. In: Cameron KS, Spreitzer GM (eds) Oxford handbook of positive organizational scholarship. Oxford University Press, Oxford, UK
- Brummans BH (2014) Pathways to mindful qualitative organizational communication research. Manag Commun Q 28:440–447. <https://doi.org/10.1177/0893318914535286>
- Chen L (1997) Verbal adaptive strategies in US American dyadic interactions with US American or East-Asian partners. Commun Monogr 64:302–323
- Cialdini RB (2009) Influence: science and practice, 5th edn. Pearson Education, Boston
- Fenig S, Levav I, Kohn R, Yelin N (1993) Telephone vs face-to-face interviewing in a Community Psychiatric Survey. Am J Public Health 83:896–898
- Glaser BG, Strauss AL (1967) The discovery of grounded theory: strategies for qualitative research. Aldine de Gruyter, Hawthorne
- Gratton M-F, O'Donnell S (2011) Communication technologies for focus groups with remote communities: a case study of research with First Nations in Canada. Qual Res 11:159–175. <https://doi.org/10.1177/1468794110394068>
- Greenfield TK, Midanik LT, Rogers JD (2000) Effects of telephone versus face-to-face interview modes on reports of alcohol consumption. Addiction 95:277–284
- Groves RM, Kahn RL (1980) Surveys by telephone: a national comparison with personal interviews. Academic, New York
- Hall ET (1989) Beyond culture. Random House, New York
- Harvey WS (2011) Strategies for conducting elite interviews. Qual Res 11:431–441
- Holbrook AL, Green MC, Krosnick JA (2003) Telephone versus face-to-face interviewing of national probability samples with long questionnaires: comparisons of respondent satisficing and social desirability response bias. Public Opin Q 67:79–125. <https://doi.org/10.1086/346010>
- Holt A (2010) Using the telephone for narrative interviewing: a research note. Qual Res 10:113–121. <https://doi.org/10.1177/1468794109348686>
- Karasti H, Baker KS, Millerand F (2010) Infrastructure time: long-term matters in collaborative development. Comput Supported Coop Work 19:377–415. <https://doi.org/10.1007/s10606-010-9113-z>
- Kee KF (2017) The 10 adoption drivers of open source software that enable e-research in data factories for open innovation. In: Matei S, Julien N, Goggins S (eds) Big data factories, computational sciences: collaborative approaches. Springer, New York, pp 51–65

- Kee K, Browning LD (2010) The dialectical tensions in the funding infrastructure of cyber-infrastructure. *Comput Supported Coop Work* 19:283–308
- Kee K, Cradduck L, Blodgett B, Olwan R (2011) Cyberinfrastructure inside out: definition and influences shaping its emergence, development, and implementation in the early 21st century. In: Araya D, Breindl Y, Houghton TJ (eds) *Nexus: new intersections in internet research*. Peter Lang, New York, pp 157–189
- Kerlinger FN, Lee HB (1999) Foundations of behavioral research. Wadsworth Publishing, New York
- Kvale S (1996) Interviews: an introduction to qualitative research. Sage, Thousand Oaks
- Lee CP, Dourish P, Mark G (2006) The human infrastructure of cyberinfrastructure. ACM Press, New York
- Lindlof T (2002) Qualitative communication research methods. Sage, Thousand Oaks
- McPherson M, Smith-Lovin L, Cook JM (2001) Birds of a feather: homophily in social networks. *Annu Rev Sociol* 27:415–444
- Meyer ET, Schroeder R (2015) Knowledge machines: digital transformations of the sciences and humanities. MIT Press, Cambridge, MA
- Newman HM (1982) The sounds of silence in communicative encounters. *Commun Q* 30:142–149
- Ribes D, Finholt TA (2008) Representing community: knowing users in the face of changing constituencies. In: 2008 ACM conference on Computer supported cooperative work (CSCW) San Diego, pp 107–116. <https://doi.org/10.1145/1460563.1460581>
- Ribes D, Lee CP (2010) Sociotechnical studies of cyberinfrastructure and e-research: current themes and future trajectories. *Comput Supported Coop Work* 19:231–244. <https://doi.org/10.1007/s10606-010-9120-0>
- Rubin HJ, Rubin IS (1995) Qualitative interviewing: the art of hearing data. Sage, Thousand Oaks
- Shrum W, Genuth J, Chompalov I (2007) Structures of scientific collaboration. MIT Press, Cambridge, MA
- Shuy RW (2002) In-person versus telephone interviewing. In: Gubrium JF, Holstein JA (eds) *Handbook of interview research: context and method*. Sage, Thousand Oaks, pp 537–555
- Stephens KK (2007a) The successive use of information and communication technologies at work. *Commun Theory* 17:486–507. <https://doi.org/10.1111/j.1468-2885.2007.00308.x>
- Stephens N (2007b) Collecting data from elites and ultra elites: telephone and face-to-face interviews with macroeconomists. *Qual Res* 7:203–216
- Sturges JE, Hanrahan KJ (2004a) Comparing telephone and face-to-face qualitative interviewing: a research note. *Qual Res* 4:107–118
- Sturges JE, Hanrahan KJ (2004b) Comparing telephone and face-to-face qualitative interviewing: a research note. *Qual Res* 4:107. <https://doi.org/10.1177/1468794104041110>
- Tracy SJ (2010) Qualitative quality: eight “big-tent” criteria for excellent qualitative research. *Qual Inq* 16:837–851. <https://doi.org/10.1177/1077800410383121>
- Tracy SJ, Eger EK, Huffman TP, Redden SM, Scarduzio JA (2014) Narrating the backstage of qualitative research in organizational communication: a synthesis. *Manag Commun Q* 28:422–431. <https://doi.org/10.1177/0893318914536964>
- Travers M (2009) New methods, old problems: a sceptical view of innovation in qualitative research. *Qual Res* 9:161–179. <https://doi.org/10.1177/1468794108095079>
- Walther JB (1996) Computer-mediated communication: impersonal, interpersonal, and hyperpersonal interaction. *Commun Res* 23:3–43



What Media Logics Can Tell Us About the Internet?

20

Studying Online Politics Beyond Techno-Optimism and Normalization

Ulrike Klinger and Jakob Svensson

Contents

Introduction: Between Techno-Optimism and Normalization	368
Media Logics	369
Media Logics Online	370
Network Media Logics of Production	371
Network Media Logics of Distribution	372
Network Media Logics of Media Usage	374
Media Logics and Mediatization	375
Media Logics and Hybridity	376
Conclusion	377
References	378

Abstract

This chapter departs from the dichotomy between techno-optimism and normalization and asks the questions how participation online has been – and can be – studied beyond this. The chapter focuses on the theory of media logics, how it has been and can be used when studying online participation. The chapter will end with a discussion of media logics locating it within the field of media and communication – increasingly a popular strand of mediatization.

Keywords

Hybridity · Media logics · Mediatization · Politics · Social media

Parts of this manuscript are based on Klinger and Svensson (2015, 2016).

Ulrike Klinger and Jakob Svensson have contributed equally to this work.

U. Klinger

Institute for Media and Communication Studies, Freie Universität Berlin, Berlin, Germany

J. Svensson (✉)

School of Arts and Communication (K3), Malmö University, Malmö, Sweden

e-mail: jakob.svensson@mau.se

Introduction: Between Techno-Optimism and Normalization

Ever since the Internet emerged, social scientists have been interested in how it can be used for political purposes (Coleman and Blumler 2009) and how it will change social processes. The rise of the Internet coincided with decreasing civic participation and the crisis of representative democracy (Dahlgren 2009). Developments toward a more *interactive* technology (often described as a Web 2.0 or social media) resulted in expectations of the Internet as a kind of “magic elixir” (Stromer-Galley 2000: 113), to increase citizen participation and bring fresh legitimacy to representative democracy. Especially proponents of deliberative democracy (Dryzek 2000) and Habermasian understandings of the public sphere approached the Internet as opening up and democratizing spaces for participation in the forms of discussion and deliberation (Gripsrud and Moe 2010). Early successful political enterprises online inspired hopes and dreams of more inclusive and participatory politics. In the wake of techno-optimism, diverse events have been credited to the rise of digital media, such as the Zapatista movement in Mexico, popular uprisings in the Middle East (Arab Spring), as well as Barack Obama’s successful 2008 and 2012 presidential campaigns.

These early techno-optimist expectations have been countered by more pessimistic voices arguing that the so-called new media would not change much (Morozov 2011) and might even harbor evil forces that could damage modern democracies, such as social bots in election campaigns, phenomena such as “astroturfing” feigning grassroots movements, the distribution of false information (fake news), filter bubbles, and echo chambers. The so-called normalization hypothesis (see Lilleker et al. 2011 for an overview) suggests that offline power structures (political as well as economic) are not overcome but merely mirrored online. The core argument is that the Internet and social media platforms are not external forces outside of society but take place within and as part of societies. Thus, they are shaped by the same power structures, socioeconomic conditions, inequalities, and injustices as society itself. As a result, the Internet would not level out the playing field, but resourceful actors from the offline world were expected to prevail in the online realm as well. Empirical studies have shown in the meantime that the truth lies somewhere in between: the Internet equalizes in some settings and normalizes in others (Koc Michalska et al. 2014; Larsson and Moe 2014).

From a theoretical perspective, normalization approaches questioned the analytical (not normative) usefulness of Habermasian and deliberative theories for understanding what is really changing in the domains of politics with the rise of more interactive platforms such as social media. In a sense, researchers are back to square one, grappling with finding fruitful analytical theories for studying how politics change when taking place online. It is here that theories of media logics can be particularly fruitful. Approaching media and communication platforms as not being inherently good or bad, while not being neutral either, media logics allow researchers to address how a transforming media landscape impacts politics – without resorting to either techno-optimism or normalization.

Media Logics

Departing from an understanding of media as a social force in society, Altheide and Snow's (1979) original account of media logics sought to understand the role of media as constituting and recognizing social reality. According to them, "media logic functions as a form through which events and ideas are interpreted and acted upon" (p. 240). They particularly emphasize that media logics are interactive and based on various participants (such as audience/user interpretation as well as media content and organization), rather than on one-way relationships in which media dictate the definitions of reality (*ibid.*: 236). In this way, they amended research interpreting media as stimulus/response conditioning, and they underlined that both communicators and audiences/users employ media logics when presenting, as well as interpreting, various phenomena (*ibid.*:10).

It is not a case of media dictating terms to the rest of society, but an interaction between organized institutional behavior and media. In this interaction, the form of media logic has come to be accepted as the perspective through which various institutional problems are interpreted and solved. (Altheide and Snow 1979: 15)

This is important since media logics have been accused for being linear, which is not the case as the quote above clearly shows. Although Altheide and Snow (1979: 12) admit that their perspective is media-centric, it is obvious from their approach that media and other societal institutions cannot be studied separately and that causal explanations treating them as separate entities will be misleading. The theory of media logics is thus suitable as a theoretical backdrop when aiming to go beyond deterministic framings of social media platforms as separate entities either bringing about positive change (techno-optimism) or merely being incorporated into existing power relations (normalization).

But what is meant with logic here? Altheide and Snow (1979: 10) talk about *formats* (the distinction between form and format being somewhat unclear in their book) as ways to select and organize material, the style of presentation, the focus, the emphasis, and the *grammar* of media. Indeed, the medium impacts the communication as it *formats* the content (Lundby 2014: 7), something that also might affect the relationship between the sender and recipient (Hjarvard 2013). Later on, in 2013, Altheide clarified that:

Media logic is defined as a form of communication, and the process through which media transmit and communicate information. Media logic is relevant when events, action, and actors' performances reflect information technologies, specific media, and formats that govern communication. (Altheide 2013: 225)

According to Strömbäck and Esser (2014: 381), logics should be understood as appropriate behavior that is consistent and reasonable within the rules and norms of the institutional context. Indeed, many scholars understand logics as *specific rules* that govern a domain, for example, how news are selected, interpreted, and

constructed in journalism (Esser 2013: 160; Lundby 2014: 28). These rules then impact other domains, such as politics. In fact, media logics, i.e., the specific rules and norms of media, might become the rationale for the behavior of non-media actors. If, for example, conflict is an important news value when journalists produce mass media content, then clearly outlining an enemy becomes part of the rules of the game for a politician who is seeking visibility in mass media.

Politics are especially connected to media (Esser 2013) and are to an increasing extent shaped by media logic (Strömbäck 2008). Altheide and Snow (1979: 103) already underlined in their first book that politics is one of the social institutions most closely aligned with the evolution of media formats and thus bears the most notable marks of media's influence. Media logics, they argue, have clearly informed political styles, cases, issues, and even outcomes (*ibid.*: 136). To obtain mass media coverage, politicians have had to adhere to the dramatization style in mass media discourses, to short sound bites, as well as to visual and entertainment formats (Kepplinger 2002). Asp (1986) showed early that politics was influenced and changed by such mass media demands. Hence, political life in its broadest sense has become situated within the domain of mass media. The logics of mass media thus shape not only what gets taken up in the media itself but also in politics, whose voices get represented and in what way (Dahlgren 2009). Thus, the fact that media logic has an impact on politics (and other social domains) is not new and something the Internet brought about. The analytical challenge is to understand how the logic of online media and hybrid media systems impact political actors that have previously adapted their behavior and strategic communication to traditional mass media logic.

Media Logics Online

The theory of media logics is largely based on mass media and politicians quest for mass media coverage. What is happening today – as this whole volume bears witness on – is that the media landscape is changing profoundly. The Internet has been established as the main locus for mediated communication and socialization for some time now, especially among the young. There is no doubt that the Internet has changed the media and communication landscape profoundly, both as a phenomenon in itself and as a locus for established/traditional mass media to migrate to (Dahlgren 2009). Politicians and parties are migrating to social media platforms (see Foot and Schneider 2006; Jackson and Lilleker 2011), and ever since the Internet emerged, researchers have been interested in how it has been utilized by politicians (Loveland and Popescu 2011: 2). Asp (1986) showed how politicians were influenced by, and adjusted themselves to, the demands of mass media (e.g., how they phrased their statements to have a better chance of mass media coverage). Meanwhile, it has been argued that politicians today express themselves in short “twitterable” phrases.

Researchers have thus attempted to apply the theory of media logics to digital media. Van Dijck and Poell (2013) were early in outlining what they label *social media logic* by identifying four grounding principles: programmability, popularity, connectivity, and datafication. Their aim was to study the dynamic between social

media platforms and social institutions. Logic in this sense refers to “the norms, strategies, mechanisms, and economies” that drive this dynamic (Van Dijck and Poell 2013: 2). *Programmability* refers to the interaction between users in front of the interfaces and the programmers and code behind it. Communication on social media platforms takes place in “coded environments” (p. 5). Code and algorithms may be invisible but influence what users can do and how they can interact with one another. As one example for this, Twitter now allows some users to tweet 280 characters, while other users remain confined to 140 characters. Thus, programmability also refers to the fact that platforms are emergent phenomena. *Popularity* is connected with programmability, because social media platforms’ algorithms reward content and actors that have a large number of followers with even more attention (i.e., the Matthew effect). Key elements are quantifiable social cues, e.g., likes, shares, hearts, and comments. Social media popularity can be easily manipulated and transferred to other social domains, such as commercial sites where popularity can be monetized. *Connectivity* addresses the fact that social media platforms are “connective ecosystems” (p. 8), linking users, activities, and content. Information can be easily spread over networks of users and commercial goods be marketed to algorithmically identified potential customers in customized communities. Finally, *datafication* means that social media platforms translate and quantify all user activities into searchable, storable, and tradable data. The ability to model, monitor, and predict social reality based on real-time data is at the core of business models behind social media platforms; it is their *raison d'être*. Van Dijck and Poell contrast mass media and social media platforms throughout their argument. But their focus is set on social media logic, as the four elements they describe are derived from these platforms. As a result, their concept is very useful for analyzing social media platforms, but its online bias makes it difficult to operationalize the overlapping dynamics in hybrid media systems.

Klinger and Svensson (2015, 2016) have in their turn outlined what they label *network media logics*. Their argument is that social media platforms are characterized by different, though overlapping, logics from mass media, with regard to media production, distribution, and usage (Klinger and Svensson 2015). This is further delineated by connecting it to three aspects of mass media’s logic: professional ideals, commercial imperatives, and technological affordances (Klinger and Svensson 2016). In other words, what Klinger and Svensson do is to break down media logics to ideals, commercial imperatives, and technological affordances of production, distribution, as well as usage of media and to differentiate logics of traditional mass media from logics of networked media. This model is then possible to apply to empirical studies of logics/combination of logics at work in a given practice/platform/context.

Network Media Logics of Production

Social media platforms have changed the way information is produced. This is most obvious on the level of the actors and the convergence of content producer and

content consumer roles. Social media platforms enable such lay participation and the making of news that comes from outside the mass media. So, where mass media logic is based on the ideal of professional content production, network media logic is based on the *ideal* of amateur production and “produsage” (Bruns 2008). It has been well established that mass media journalists employ news values to distinguish newsworthy information from less relevant material. Conversely, the logic behind posting on social media platforms is instead guided by authors’ selection of information that is of personal interest to them, by their reflexive individualization and by the anticipation of maximal attention. Information selection on social media platforms differs from that on mass media that already have a mass audience (so-called pull vs push media).

Concerning *commercial imperatives*, content production on mass media comes at high organizational costs: professional journalists, offices, access to data and resources, local correspondents in other countries, and maintaining professional equipment, just to name a few. In contrast, content production on social media platforms has only very low organizational cost: amateur content “produsers” only need ordinary consumer equipment. Also, the sharing of readily produced journalistic content results in low organizational costs. Providing information on social media platforms is in fact so inexpensive that the commercial logic of mass media is reversed.

What practices are *technologically afforded* by mass media formats? Esser (2013: 173) argued that television afforded more visual, affective, and less cognitively complex information than print. The Internet, in turn, affords user interaction and participation to a larger extent than mass media (even though mass media is slowly adapting to network media logic). It could be argued that the technologies of mass media in general afford time-consuming top-down information production (reframing/redistribution) from professional journalists for an audience of subscribers. Network media technologies on the other hand afford quick lay production (reframing/redistribution) of information for friends and like-minded. This information production is rather based on reflexivity, since social media platforms afford immediate, more horizontal, interactive, and highly individualized communication (for a more thorough discussion on Internet affordances, see ► Chap. 18, “[Researching Affordances](#)”). In other words, citizens choose the story that resonates with them and their opinion the most, and they can avoid exposure to alternative narratives. In this sense, social media platforms can afford filter bubbles and in-group polarization to a larger extent than mass media that in turn addresses a more heterogeneous audience.

Network Media Logics of Distribution

Social media platforms have also changed the way information is disseminated, which introduces a different logic of distribution. It is no longer only professionals, such as journalists or other central gatekeepers, who can filter, edit, and forward information to their recipients, but users themselves are forming nodes in their own information networks. Distribution on social media platforms is built on

the *ideal* of virality, which can be defined as “network-enhanced word of mouth” or “the process which gives any information item the maximum exposure, relative to the potential audience, over a short duration, distributed by many nodes” (Nahon et al. 2011: 1). Gaining relevant resonance within social media platforms thus depends on the ability to publish information that users will forward within their networks, comment on, and recommend to other users. If the information posted on social media platforms does not have the specific viral quality that provokes users to spread it around, it will not reach beyond a very limited circle of supporters – or, in Bennett and Segerberg’s (2012) words, “people must show each other how they can appropriate, shape, and share themes” (p. 8). While professionals working for traditional mass media usually know that their publications will reach a certain number of subscribers or viewers/listeners (ideal of subscription), the same publications have to first be found on social media platforms and thereafter distributed by and among networks of peers and like-minded users. Thus, information is no longer simply delivered from the sender to the recipient but has to be distributed from user to user, like a chain letter.

Beside advertisement revenues, mass media *commercially* depend on a base of subscribers paying for professional information production, selection, and framing. On networked media, relevance does not come through professional selection and content production but through viral distribution via like-minded others. This has consequences in the sense that information on social media platforms may reach a number of self-selected like-minded others, but not a general public. In fact, only very little information on social media platforms receives much attention; most remains unnoticed. Virality implies this asymmetrical distribution of information, an asymmetry based on popularity and like-mindedness in the sense that social media platforms enhance the domination of popular information and popular “producers.” Certain postings gain more visibility than others. Swift dissemination is also facilitated by elite and top general bloggers (Nahon et al. 2011). Hence, distribution on social media platforms depends on like-minded and popular online intermediaries who serve as catalysts rather than as professional gatekeepers (as within mass media). This has been discussed as “secondary gatekeeping” (Singer 2014) and as a “connective culture” (van Dijck 2013): a culture that is thriving on social media platforms and that is underpinning the business models of today’s social media conglomerates. This also refers back to the connectivity and popularity principles in van Dijck and Poell’s (2013) outline of social media logics, underpinning what they label an attention economy in social media.

This means that on social media platforms, popularity among like-minded users, not professional gatekeepers, decides whether information is relevant and passed on (i.e., goes viral) or not. This signals an *affordance* for updating in peer networks rather than broadcasting among subscribers. Information distribution online is rather based on reflexivity, since network media technology to a large extent affords immediate, more horizontal, interactive, and highly individualized communication. In other words, social media platforms afford interaction and peer-to-peer-communication, while mass media afford a traditional top-down broadcasting model of distribution.

Network Media Logics of Media Usage

Social media platforms enable high levels of selective exposure and have fragmented audiences, thereby creating a different logic of media usage. Altheide (2014) has even argued that social media had “eviscerated” (p.x) the audience as a significant factor and that the audience as a concept is challenged and “disappearing” (p. 3). Social media platforms make it easier for the like-minded to socialize from their home environments and over great distances because digital technology facilitates geographically spread niche networks based on interest rather than location. This sharing of (personal) information is an *ideal* online, to reflexively confess and share personal information and minute-to-minute updates about thoughts, feelings, whereabouts, and opinions as well as being updated with like-minded and updated on their doings. Castells (2008) has referred this personalized information use as mass self-communication. It is indeed so pervasive on social media platforms that Fenton (2012) asked whether social media did anything else but “serve self-centered needs and reflect practices structured around the self” (p. 142). This idealization of the self, in tandem with idealizing peers and like-minded, when using network media, is different from mass media use. Mass media use is instead based on ideals of passive consumption of professionally selected, curated, framed, and interpreted news items.

When connecting to like-minded and peers on social media platforms, users directly and indirectly tailor what information will reach them. In other words, social realities are to an increasing extent constructed and organized through online social networks. News feeds of selected others’ likes, dislikes, and behaviors enable users to anticipate their future needs and wants based on others’, as well as their own, aggregated past choices (Hands 2011: 128). It becomes apparent that social media practices are informed by the capitalist logic of platform owners capitalizing on the information that their users share. Being online and updating social media profiles with information, users are making their attention, personal, and trace data exploitable for capitalist companies. This is different from offline mass media corporations who make money on subscribers’ payments and/or willingness to be exposed to advertisements, based on the belief that journalists are providing them quality information.

Network media *technology affords* reflexive updating in more fragmented peer networks. Network media thus offers more repertoires of media usage than the more passive consumption of broadcast professionally produced, reframed, and redistributed information. Users today have to navigate within information abundance, to select what is relevant – which is why content-sharing and suggestions from contacts within social networks are influential. The network of peers and like-minded others on social media platforms informs users about the variety of choices but above all about what they have chosen and done in similar situations. Updating becomes afforded since users have to be constantly updated in order not to miss out on something, since online information spreads fast.

Media Logics and Mediatization

Media logics and mediatization are so tightly intertwined that current debates within mediatization deserve to be mentioned here. Livingstone (2009) defined mediatization as the “meta-process by which everyday practices and social relations are historically shaped by mediating technologies and media organizations” (foreword p. x, see also Krotz 2009: 24). Hjarvard (2008: 113), when discussing mediatization, explicitly referred back to the term media logic as something society and its institutions to an increasing degree are submitted to. Mediatization is thus used to both describe a general meta-process (on par with globalization, individualization, and commercialization, see Krotz 2009: 25) and, from an institutional perspective (see Hjarvard 2008), analyze the interplay between media and other social institutions (even though the media side gets underlined by the very name of mediatization). It is particularly within the institutional perspective that media logics are referred to, not the least in relation to the institutions of politics.

The theory of media logics is however different from mediatization in that mediatization refers to a general tendency in which almost all parts of society are affected by the media, whereas the concept of media logics attempts to uncover to what in media platforms, their organization, and practices, the institutions of society are adapting. It can therefore be argued that media logic is a useful analytical theory since it is more tangible and easier to apply in empirical research.

Mediatization scholars have expressed concern with the singular use of the term “logic.” Couldry (2008) criticized what he claims is a tendency in some mediatization approaches to identify “one single type of media-based logic that supersedes older logics” (p. 378) and that social transformations are “too heterogeneous to be reduced to a single media logic” (*ibid.*, see also Lundby 2009: 104–110). In a recent encyclopedic contribution, Hjarvard (2017) finally laid the notion of a single media logic to rest:

The concept of logics is a metaphor and shorthand for the various *modi operandi* that characterize the workings of the media. As with any other institutional domain, media encompass rules (formal and informal) and resources (material and symbolic (...)), and the notion of logics seeks to capture how these rules and resources translate into operational features in everyday practices of the media. Logics are, therefore, not an exhaustive description of all possible characteristics of the media but only concern the workings of the media. (...) Evidently, there is no one singular media logic at work but rather a mix of overlapping logics that may to varying degrees work in tandem or in conflict with one another. When we talk about the logics of the media, we are thus using the notion of logic as a shorthand for the entire configuration of technological, aesthetic, and institutional dynamics at work within a given media entity. (Hjarvard 2017: 12)

Different logics, both in the media and in the political realm, coexist and may have different weight/importance due to situations, actors, and other circumstances. Chadwick (2013) in his theorizing of hybrid media systems has been particularly illuminating that that also may change over time and thus is not fixed.

Media Logics and Hybridity

In his 2013 book, Chadwick has famously argued that the online and offline sites of communication do no longer constitute separate domains but have merged into hybrid media systems. And indeed, even in everyday practices, it is difficult to separate them, because there is no longer purely analogue, offline media. For instance, subscriptions of newspapers automatically include a digital or mobile version (or at least access to it), TV channels stream content in online portals, while Amazon is opening up (paper!) bookshops on Main Street. This of course begs the question why there still needs to be a discussion of distinct media logics, instead of moving to a hybrid understanding of such logics.

The reason is quite simple: understanding media systems as “hybrid” does not magically dissolve the different norms and processes (or rules of the game) between traditional mass media (which, by the way, can also be found online, e.g., portals of newspapers) and social media platforms. Chadwick himself acknowledges and discusses media logics as central aspects of this concept: “How political and media actors shape and are shaped by older and newer media logics, and the extent to which they mobilize, traverse, and integrate these logics to exercise power, is what this book is about” (p. 22). In fact, the idea of hybridity relies on at least two definable components that either converge into a hybrid form (such as a “melting pot”) or constitute the poles between gradually diverging hybrid forms.

Network media logic is thus by no means replacing mass media logic. The core argument here is that social media platforms follow other *rules of the game* than traditional mass media, particularly in the three dimensions of content production, information distribution, and media use, as outlined above. This does not mean that mass media logic is becoming obsolete or marginal. The reason for this is, again, quite simple: the majority of relevant information still comes from journalistic content production, is distributed via established mass media, and is used by individuals with routinized media menus. In other words, in increasingly hybrid media systems, mass media and network media logic tend to overlap and intertwine. Connected to this, mass media logic and network media logic should not be understood as dichotomous concepts that are mutually exclusive.

The hybrid media system is based upon conflict and competition between older and newer media logics but it also features important pockets of interdependence among these logics. (Chadwick 2013: 207)

And although different logics can be distinguished at work in different types of media – because they have to be separate to be in conflict and competition with each other – media convergence makes it impossible to sort media types according to their logic (such as newspapers working exclusively on mass media logic or content in online networks always being produced according to network media logic). Mass media and network media logic rather overlap and intertwine.

In the dimension of content production, this can be observed in Facebook groups of political parties, where a relevant part of posts consists of sharing journalistic content from newspapers, radio, or other traditional media (Klinger 2013). On the

other hand, Twitter has become an important source for journalists, who use it to monitor actors and institutions of interest (Broersma and Graham 2012). Furthermore, journalist bloggers tend to normalize blogs by “sticking to their traditional gatekeeper role” (Singer 2005: 192) while at the same time moving away from nonpartisan presentation of information. Hermida (2010) has pointed out that “there are indications that journalism norms are bending as professional practices adapt to social media tools such as micro-blogging” (p. 300) and refers to (micro)blogging as “ambient journalism” (*ibid.*). The notion of “robot journalism” and “algorithmic journalism” (Clerwall 2014) refers to a transformation of journalistic practices that is increasingly driven by data, automated content production, and algorithmic selection previously known from social media platforms. This changing and bending of norms and practices is what happens when different media logics intertwine, overlap, and inform each other: professional journalists take their norms and practices to blogs and social media platforms, while the inherent production logic of networked media on their part penetrates professional news organizations. This overlapping may not be free of conflict, as norms and practices can collide – Hermida and Thurman (2008) diagnose what they call a clash of cultures in their study of British newspaper websites and their integration of user-generated content. Also debates around produc-usage often take into account the permeation of traditional mass media logic and network media logic, captured in notions such as *interactive journalism* and *citizen journalism*.

The network media logic of distribution and media use occasionally penetrate the realm of traditional mass media. Examples are articles on online portals being ranked in most emailed lists: news selections increasingly focusing on audience metrics – i.e., estimations of the online traffic they will generate – and journalists being evaluated (maybe even paid) by the number of clicks their articles generate (Anderson 2011). On the other hand, there are formats in the online realm that resemble traditional media, such as elite press portals. Furthermore, the network media logic of distribution has altered the media market’s business models. While traditional media delivering information unilaterally to their audience are based on users paying for a product, the distribution logic of sharing content on social media platforms has led to new economic models. One example is freemiums, in which basic services are free but premium features come at a cost. This relates also to business models built around the participatory culture of social media platforms (“wiki-nomics,” see Van Dijk and Nieborg 2009). Advertisement models are increasingly based on social media monitoring, on data mining, and on the targeting of fragmented online “niche” audiences, while traditional mass media employ a catch-all model, targeting mass audiences by means of rating data.

Conclusion

The conditions of public communication have changed profoundly in the past 20 years. Not only has the locus shifted to coded environments built around networks instead of audiences, to platforms instead of publishers and broadcasters,

driven by business models based on data and attention. But what has significantly changed and diversified is how information is produced, how information is distributed, and how media are used. Social media platforms are not anymore a new phenomenon but have had quite an impact on traditional mass media and pushed for the hybridization of media systems of today.

To understand and be able to empirically analyze online politics and communication in general in networked environments, scholars need to have midrange theories (not trying to explain society as a whole but going beyond the single individual or event) conceptualizing the inner workings, norms, rules, and processes of different types of media and platforms, i.e., their logics and combination of logics. At the same time, it must be avoided to stick too closely to the phenomena themselves. For example, developing Twitter logics would just as pointless as a radio logic.

How can political campaigns succeed in networked environments? Why is journalism struggling and can networked media deliver information and knowledge that enable the self-monitoring of society? Media logic theories allow scholars to ask such questions and search for answers without resorting to the “newness” of social media and without presumptions about positive or negative potentials. It is time to move beyond assessing the potentials of social media but to study how they afford and impact communication in today’s hybrid media system. The analytical model contrasting mass media from network media logics provides one way to this. The division of media into production, distribution, and usage and logics into ideals, commercial imperatives, and technological affordances provides neat categories to structure analyses as well as data gathering around.

References

- Altheide DL (2013) Media logic, social control, and fear. *Commun Theory* 23(3):223–238
- Altheide DL (2014) Media edge: media logic and social reality. Peter Lang, New York
- Altheide DL, Snow RP (1979) Media logic. Sage, Beverly Hills
- Anderson C (2011) Between creative and quantified audiences: web metrics and changing patterns of newsworthiness in local US newsrooms. *Journal: Theory Pract Crit* 12(5):550–566
- Asp K (1986) Mäktiga massmedier: Studier om politisk opinionsbildning. (Powerful mass media: studies of political opinion formation). Akademilitteratur, Stockholm
- Bennett LW, Segerberg A (2012) The logic of connective action. *Inf Commun Soc* 15(5):739–768
- Broersma M, Graham T (2012) Social media as beat: tweets as a news source during the 2010 British and Dutch elections. *Journal Pract* 6(3):403–419
- Bruns A (2008) Blogs, Wikipedia, second life, and beyond. From production to produsage. Peter Lang, New York
- Castells M (2008) The new public sphere: global civil society, communication networks, and global governance. *Ann Am Acad Pol Sci* 616(1):78–93
- Chadwick A (2013) The hybrid media system: politics and power. Oxford University Press, Oxford
- Clerwall C (2014) Enter the robot journalist. Users’ perception of automated content. *Journal Pract* 8(5):519–531
- Coleman S, Blumler J (2009) The internet and democratic citizenship: theory practice and policy. Cambridge University Press, New York

- Couldry N (2008) Mediatization or mediation? Alternative understandings of the emergent space of digital storytelling. *New Media Soc* 10(3):373–391
- Dahlgren P (2009) Media and political engagement. Citizens, communication, and democracy. Cambridge University Press, New York
- Dryzek J (2000) Deliberative democracy and beyond. Liberals, critics, contestations. Oxford University Press, Oxford
- Esser F (2013) Mediatization as a challenge: media logic versus political logic. In: Kriesi H et al (eds) Democracy in the age of globalization and mediatization. Palgrave Macmillan, Basingstoke, pp 115–176
- Fenton N (2012) The internet and social networking. In: Curran J, Fenton N, Freedman D (eds) Misunderstanding the internet. Routledge, London, pp 123–148
- Foot K, Schneider SM (2006) Web campaigning. MIT Press, New York
- Gripsrud J, Moe H (2010) The digital public sphere. Nordicom, Göteborg
- Hands J (2011) @ is for activism. Dissent, resistance and rebellion in a digital culture. Pluto Press, New York
- Hermida A (2010) Twittering the news: the emergence of ambient journalism. *Journal Pract* 4(3):297–308
- Hermida A, Thurman N (2008) A clash of cultures: the integration of user-generated content within professional journalistic frameworks at British newspaper websites. *Journal Pract* 2(3):343–356
- Hjarvard S (2008) The mediatization of society a theory of the media as agents of social and cultural change. *Nordic Rev* 2:105–134
- Hjarvard S (2013) The mediatization of culture and society. Routledge, London
- Hjarvard S (2017) Mediatization: critical theory approaches to media effects. In: Rössler P, Hoffner CA, Zoonen LZ (eds) The international encyclopedia of media effects. Wiley-Blackwell, Malden, pp 1221–1241
- Jackson N, Lilleker D (2011) Microblogging, constituency service and impression management: UK MPs and the use of twitter. *J Legis Stud* 17(1):86–105
- Kepplinger HM (2002) Mediatization of politics. Theory and data. *J Commun* 52:972–986
- Klinger U (2013) Mastering the art of social media: Swiss parties, the 2011 national election and digital challenges. *Inf Commun Soc* 16(5):717–736
- Klinger U, Svensson J (2015) The emergence of network media logic in political communication. A theoretical approach. *New Media Soc* 17(8):1241–1257
- Klinger U, Svensson J (2016) Network media logic. Some conceptual clarification. In: Bruns A, Enli G, Skogerbo E, Larsson A, Christensen C (eds) Routledge companion to social media and politics. Routledge, London, pp 23–38
- Koc-Michalska K, Gibson R, Vedel T (2014) Online campaigning in France, 2007–2012: political actors and citizens in the aftermath of the web. 2.0 evolution. *J Inform Tech Polit* 11(2):220–244
- Krotz F (2009) Mediatization. A concept with which to grasp media and social change. In: Lundby K (ed) Mediatization: concept, changes, consequences. Peter Lang, New York, pp 21–40
- Larsson AO, Moe H (2014) Triumph of the underdogs? Comparing Twitter use by political actors during two Norwegian election campaigns. *Sage Open* 4(4). <https://doi.org/10.1177/2158244014559015>
- Lilleker DG, Koc-Michalska K, Schweitzer EJ, Jacunski M, Jackson N, Vedel T (2011) Informing, engaging, mobilizing or interacting: searching for a European model of web campaigning. *Eur J Commun* 26(3):195–213
- Livingstone S (2009) Foreword. Coming to terms with “mediatization”. In: Lundby K (ed) Mediatization: concept, changes, consequences. Peter Lang, New York, pp 9–11
- Loveland M, Popescu D (2011) Democracy on the web. *Inf Commun Soc* 14(5):684–703
- Lundby K (2009) Media logic: looking for social interaction. In: Lundby K (ed) Mediatization: concept, changes, consequences. Peter Lang, New York, pp 101–119
- Lundby K (2014) Mediatization of politics: transforming democracies and reshaping politics. De Gruyter Mounton, Berlin
- Morozov E (2011) The net delusion. The dark side of internet freedom. Public Affairs, New York
- Nahon K, Hemsley J, Walker S et al (2011) Fifteen minutes of fame. The power of blogs in the lifecycle of viral political information. *Policy Internet* 3(1):6–33

- Singer JB (2005) The political j-blogger. ‘Normalizing’ a new media form to fit old norms and practices. *Journalism* 6(2):173–198
- Singer JB (2014) User-generated visibility: secondary gatekeeping in a shared media space. *New Media Soc* 16(1):55–73
- Strömbäck J (2008) Four phases of mediatization: an analysis of the mediatization of politics. *Har Int J Press/Politics* 13(3):228–246
- Strömbäck J, Esser F (2014) Mediatization of politics: transforming democracies and reshaping politics. In: Lundby K (ed) *Mediatization of communication*. De Gruyter Mounton, Berlin, pp 374–404
- Stromer-Galley J (2000) On-line interaction and why candidates avoid it. *J Commun* 50(4):111–132
- van Dijck J (2013) The culture of connectivity: a critical history of social media. Oxford University Press, Oxford
- Van Dijck J, Poell T (2013) Understanding social media logic. *Media Commun* 1(1):2–14
- Van Dijk J, Nieborg D (2009) Wikinomics and its discontents: a critical analysis of web 2.0 business manifestoes. *New Media Soc* 11(5):855–874



An Obscure Object of Communicational Desire: The Untold Story of Online Chat

21

Guillaume Latzko-Toth and Maxigas

Contents

Introduction: Historicizing a Media of “Real Time”	382
Trajectories of Online Chat Devices: From Hacks to Platforms	384
Hacks	384
MUDs and BBSs	385
Relay Chats	386
Instant Messaging (IM)	389
Platformization	389
Chat as a Practice: Between Desire and Repression	390
Conclusion	391
References	392

Abstract

The aim of this chapter is twofold. First, it seeks to provide the reader with an overview of the literature on online synchronous text conferencing (also known as “chatting”). The chapter then offers a critical account of the genealogy of online chat, understood as a series of devices (protocols, programs, features), technological metaphors, and practices. Existing scholarship has addressed various dimensions of online chat – linguistic, pragmatic, cultural, social, psychological, organizational – but lacks a historical, diachronic perspective on this form of computer-mediated communication. The authors take on the task of disentangling the many threads and crossing trajectories of chat devices and

G. Latzko-Toth (✉)

Department of Information and Communication, Université Laval, Quebec City, Canada

e-mail: guillaume.latzko-toth@com.ulaval.ca

Maxigas

Department of Sociology, Lancaster University, Centre for Science Studies, Lancashire, UK

Internet Interdisciplinary Institute, Universitat Oberta de Catalunya, Barcelona, Spain

e-mail: maxigas@lancaster.ac.uk

practices, from the early days of chat to its recent developments. Beyond a mere genealogy of artifacts, this account focuses on a number of factors that establish continuity in the narrative. First, users' nearly universal desire to chat on whatever communication device is at hand. Second, administrators' repression against the misuse (or abuse) of digital resources that seeks to establish manageable boundaries. Third, the persistence of chat as a participation framework in the form of written conversations, despite major advances in the underlying technologies. These observations contribute to restoring chat to its place as a major thread within Internet history and the broader trajectory of media and communications.

Keywords

Online chat · Social media history · Computer-mediated communication · Text conferencing · Internet Relay Chat (IRC)

Introduction: Historicizing a Media of “Real Time”

Online chat – or simply chat – refers to online synchronous text conferencing. By that we mean the use of a computerized device in order for two or more users to interact by exchanging text messages in a real-time fashion. A computer-mediated communication (CMC) device is said to be synchronous if it involves the simultaneous engagement of interactants in the communication process, likewise a conversation on the phone, and contrary to e-mail communication, a canonical example of asynchronous CMC. The synchronous/asynchronous typology applied to CMC devices goes back to the early researches on communication technology (see notably Vallee et al. 1974, 1975; Hiltz and Turoff 1978; Kerr and Hiltz 1982). It is still widely employed today for the analysis of CMC devices. Whereas some authors prefer to use the term “near-synchrony” instead of synchrony, the notion of synchrony should be understood as referring to a *social temporality*, or temporal structure of interaction. The practice of chatting has been constructed as a digitally-mediated form of social synchrony, requiring the interactants’ simultaneous *presence* at their respective screen (Latzko-Toth 2010). In other words, it is a form of *co-presence* without any reference to physical space (Zhao and Elesh 2008). Internet users tend to restrict the term “chat” to devices based on text, by contrast with those promoting interaction by voice, video, or through graphic avatars. It should be also noted that early chat program users and developers would often reserve the word “chat” for devices designed for *group* interaction, as exemplified by this definition by an IRC veteran, who played an active role in its development:

a chat system [...] is a form of group communication where people sitting at a networked computer in different locations on the planet get together in a virtual room and speak with each other typically by typing text, at least these days. The word “chat” alludes to the typical relaxedness of socialization going on in chatrooms. (Loesch 2007)

This specificity would set online chat apart from *instant messaging*, another form of online, quasi-synchronous text interaction that tends to be confused with mobile

practice of text messaging – also known as texting. Rather, considering that most chat programs allow for one-on-one conversations and that, conversely, most instant messaging tools allow for group conversations, we prefer to see them as two distinct participation frameworks of online chatting (see Latzko-Toth 2010).

As a *communication practice*, chat has been studied for its linguistic and conversational features (Werry 1996; Rintel and Pittam 1997; Danet et al. 1997; Herring 1996; Herring et al. 2013; ten Have 2000; Ooi 2002; Velkovska 2004) or as a frame of social interaction, in a goffmanian perspective (Bays 1998). Online community and identity construction has also driven attention to online chat before the social web emerged (Reid 1991; Bruckman 1992; Bechar-Israeli 1995; Markham 1998; Kendall 2002; Pastinelli 2007). Finally, uses of chat in educational contexts (Hudson and Bruckman 2002; Yardi 2008) and the role of instant messaging in social network sustainment and development (Best and Krueger 2006; Quan-Haase 2008) have been investigated.

However, very little attention has been paid in this scholarship to the history and emergence of chat, with the exception of brief and partial accounts to introduce the object of study – often a specific system or application. It is not addressed either in historical literature on the emergence of communication networks, such as Janet Abbate's comprehensive effort (Abbate 1999). The practice of online chat has been mostly studied as an a-historic research object.

Online chat is somehow paradoxical. It is evanescent and ephemeral for it leaves few traces – at least in a public form. But it is also persistent as a social practice and as a participation framework, a “stickiness” (Herring 2004) which is at odds with the widespread assumption that text conferencing is archaic in a contemporary context of bandwidth and multimedia abundance.

Online chat is a media of the present and of presence – which the phrase “real-time” tries to grasp. As a vehicle for contents ephemeral and trivial in nature, it does not naturally generate archives as other media, including digital media like e-mail (discussion lists), Internet forums, or the Web. This might constitute an explanation for the lack of scholarly interest for the history of this practice. Another reason might be the vaporous nature of the device, as it is scattered in myriad rapidly changing programs and application “features,” with no single technical artifact epitomizing “chat,” like a standard protocol – contrary to email, newsgroups, and the Web, with the quasi-exception of Internet Relay Chat – as we will see later on.

The overarching goal of this chapter is therefore to “historicize” online chat as an object of study, by providing a tentative genealogy of chat from the point of view of *devices*, that is, the sets of machines, computer programs, interfaces, and uses that become termed as a distinct entity like “MUD,” “IRC,” “webchat,” “IM,” etc. We therefore tackle the task of disentangling the many threads and crossing trajectories of chat devices and practices, offering a periodization from the early days of chat to its recent developments. From the first “hacks” on mainframe consoles and chat programs in digital environments predating the Internet (e.g. PLATO Talkomatic; BITNET Relay; CompuServe CB Simulator), to the open Internet chat protocols (e.g. IRC, XMPP), the era of Instant Messaging applications (ICQ, MSN, etc.), and

to the recent integration/hybridization of chat into “social platforms” and with mobile texting (Skype, Facebook, Twitter).

Beyond a mere genealogy of artifacts, this account is structured around two axes of analysis. The first one is the tension between place-centered and ego-centered chat devices. It is argued that these two types of applications have existed from the onset of online chat, but that the latter seems to have taken over, for several reasons that are examined. The second axis of our analysis is the dialectics of use and misuse (or abuse) of digital resources, which raises the issue of governance and the social construction of a desired use. The case of online chat suggests that what may have been regarded as the “virtual slums” of the Internet constitute a fertile site of socio-technical innovation regarding network governance, notably peer governance.

Trajectories of Online Chat Devices: From Hacks to Platforms

Hacks

The concept of “instant” message predated the notion of real-time interactive conversation (chat), and probably e-mail as well, to which it is tightly related as an innovation. Vleck (2001) situates the debut of the instant message in the mid-1960s, first on CTSS system, then on Multics, predecessor of Unix. The 1965 CTSS programming manual describes a feature called “inter-user communication,” with this comment: “To provide the facility for users to communicate with each other directly, several routines have been added [...] which allow the sending and receiving of messages by way of the console input buffers.” In general though, it was the creative appropriation by users of an existing feature that led to synchronous messaging. Jeff Kell’s own experience (1987) is a good example of this phenomenon of spontaneous invention of the instant message by “hijacking” another function. He recalls his discovery of online chatting at a time when he was working as a student operator on a remote IBM 360 located at another University of Tennessee campus, a screenless teletype-like console:

One evening, a strange message came over the console, something like:

*\$21.05.31 HASP0254I 0,'HAVING FUN LOOKING AT THE JOBS FOR MEMPHIS?'

Well, looking up the error code for HASP0254I, I discovered it was an operator message, and the ‘0’ meant it came from the host system which is remote number 0 (we were remote 4). I had just received my first interactive message of my life. I looked up the command to send back a reply and entered:

\\$DM0,'NOTHING ELSE TO DO UNTIL CAVANAUGHS BIG LIST FINISHES PRINTING'

Now this WAS fun. We talked about 30 minutes. He introduced me to the other night operators at the other remotes. It certainly beat watching the 1403 eat paper for hours, which was about all there was to do since I worked nights and was the only person there. Thus, even in the days of cards, punches, and dumb printing consoles, chatting was possible.

We observe that on a technical level, the ability to transmit a character stream between two devices is a basic test case for digital connectivity. However, it seems that the basic technique of text transmission was instantly recognized by its users as a socially valuable media in its own right, synonymous with a distinct type of sociality. At this time, synchronous conferencing in its most primitive form consisted of linking two terminals (or consoles) together so that whatever one user typed would be printed/displayed on both terminals on a character by character basis (Day 2002). Just like in oral conversation, the two parties had to interrupt themselves in order to let the other one speak. That was also the case with the very first instance of the “Talk” program, which appeared on the PDP-11 mini-computer series launched by DEC in 1970.

The “Talk” program made its official entry in the set of Unix commands in 1983, with version 4.2 of the Berkeley distribution (4.2BSD) (See FreeBSD *man pages*: <http://www.freebsd.org/cgi/man.cgi>; On 4.2BSD, see Salus (1995, 130)) – the first featuring the TCP/IP network protocol underlying ARPANET, then the Internet. Several variants followed (Cruz, non-dated). However, according to Darren Reed (co-author of RFC 1459 defining the IRC protocol), those programs had no interoperability between different versions of Unix (Reed 1992).

MUDs and BBSs

In 1978, Roy Trubshaw and Richard Bartle created “MUD” – the prototype of programs of this kind – on a computer at the University of Essex, U.K. The acronym meant: “Multi-User Dungeon.” The word “dungeon” does not directly refer to the role-playing game *Dungeons & Dragons* as can often be read, but to *Dungeon*, a variant of the *Zork* game that Trubshaw was keen of. Along with *Adventure* it was a good representative of early online adventure games (Bartle, cited in Shefski 1995). It was therefore the first *multi-user* version of an online adventure game, with yet another characteristic: it was *persistent*. Very quickly, social interaction tended to prevail over the game features. As Bartle (1990) puts it, “the game was originally little more than a series of inter-connected locations where you could move and chat.” Commenting on an early version, he notes: “At that point, there was no objective for the players, and only primitive communication.” Shefski (1995, 2) synthesizes the technical nature of a MUD – and perhaps the very essence of a chat device – by calling it “a computer program that applies the principles of shared memory to the act of communication.”

In 1989, Jim Aspnes, then a student at Carnegie Mellon University, got the idea of making a “simplified,” minimalist MUD, with all the classic role-playing game motifs stripped (quests, monsters...). TinyMUD was a “social” game putting more emphasis on interaction and cooperation among players than on fighting (Stewart 2000). Contrary to the opacity of the code of first-generation MUDs, the transparency, simplicity, and portability of TinyMUD earned it a wide diffusion and numerous offsprings such as MUSHes (“Multi-User Shared Hallucinations”, probably referring to William Gibson’s definition of cyberspace) and MUSEs (“Multi-User

Shared Experiences/Environments”): sociality-oriented “virtual environments” closer to chat devices than to online games (as often heard about the contemporary “game,” *Second Life*). A divide formed between MUD enthusiasts who were more interested in battles and rivalry between users, and those seeking social spaces more oriented towards conviviality (Shefski 1995, 35). In the early 1990s, other MUD variants devoid of the game reference appeared, called *talkers*. They retained only the communication features and the spatial metaphor of the “room” – a surprising return to origins! The term *chatroom* therefore constitutes a legacy from MUDs, but from users’ point of view, it is functionally equivalent to a “channel.”

Other single-server chat devices were developed along similar principles but without any relation to MUDs. ForumNet – later called ICB for “Internet Citizen’s Band” – was a monoserver chat application created in the spring of 1989 by Sean Casey. Soon after he released the “fn” client software, it spread to universities in the United States. Hauben and Hauben (1997, 17) report an enlightening testimony on how users of these early chat devices valued the social bond being built in the small electronic communities that emerged from their usage:

When I started using ForumNet [...] back in January 1990, I was fairly shy and insecure. I had a few close friends but was slow at making new ones. Within a few weeks, on ForumNet, I found myself able to be open, articulate, and well-liked in this virtual environment. Soon, this discovery began to affect my behavior in “real” face-to-face interaction. I met some of my computer friends in person and they made me feel so good about myself, like I really could be myself and converse and be liked and wanted.

The burgeoning of chat devices during the years 1980–1990 seems to result from a desire by early users to appropriate real-time CMC in order to develop social ties on networked computer systems, almost right from their inception. A parallel line of development took place in the academia, where popular conferencing systems such as “Talkomatic” on the PLATO and “Party-Line” on the EMISARI systems allowed users to partake in “simultaneous written conversation” (Hiltz and Turoff 1993, 55). While PLATO designers would not officially implement real-time group conversations, conversely it was considered a key feature of the EMISARI system (see Dear 2017 and Hiltz and Turoff 1993 for detailed accounts). The common characteristics of these devices were the reliance on a single server and therefore a centralized architecture, even though open source programs meant that similar services could be set up by almost anybody in possession of a computer with connectivity.

Relay Chats

BITNET Relay

It’s on the BITNET network, in 1985, that the first chat “infrastructure” connecting several servers together was born: BITNET Relay – or simply “Relay.” The concept had already circulated on BITNET. Phil Howard describes it in 1985 in an e-mail exchange concerning BITNET policy on chat (Condon 1985). Jeff Kell, who was

then working at the University of Tennessee at Chattanooga, implemented it. He relates vividly and with a bit of nostalgia the rise and fall of this sociotechnical device which foreshadowed the Internet Relay Chat (Kell 1987). The concept of “relay” – which may be seen as a metaphor evocative of hertzian broadcasting – seems to have imposed itself heuristically as a solution to the saturated bandwidth of the computers forming the nodes of the BITNET network. In a note dated February 26, 1985 and sent to all BITNET administrators, Henry Nussbacher, then head of the Network Information Center (BITNIC), criticizes chat servers operating on BITNET, putting forward that they constituted a serious threat for the network. Even though his reasoning is meant to be purely technical, there is an underlying normative argument about the legitimate uses of the network:

The bulk of data being transferred over TP [*twisted pair*] lines becomes a hackers CB world. High school students and college undergraduates discuss everything from dirty jokes to sex to crashing the VM system. (Nussbacher, reproduced in Condon 1985)

Interestingly enough, Nussbacher compares online chat to radio conversations on the “Citizen’s Band” (CB), but his analogy is not limited to technical aspects; he likens two social worlds, the hackers’ and the cibists’, with an obvious negative connotation. One of the targeted students noticed it, and sent back an eloquent reply (reproduced in Condon 1985) in the shape of a defense of online chat, its legitimacy and its innocuity. He notably proposes that “by generalizing that conversations consist of obscene messages, [Nussbacher is] censoring and undermining any and all productive conversations as well.” Legitimacy of contents, positive socio-affective outcomes, collaborative learning, and collective intelligence are a few themes of this vibrant plea in favor of chat. The exchange between Nussbacher and this student can be considered exemplary as it typifies the positions that was often held in controversies opposing proponents and opponents of chat on campuses (Latzko-Toth 2010). As Quan-Haase (2008) argues, in general, sociality-oriented chat devices implemented in academic contexts have not received institutional support (the “TERM-Talk” PLATO feature and the Zephyr system pertain more to instant messaging); at best they are tolerated by the authorities. Relay itself did not escape the controversy around the legitimacy of chat practices in the context of resource scarcity. Less than a year later, Cornell University decided to shut down their Relay server after some BITNET user accounts had been hacked and the investigation revealed that it was for chatting on Relay. Cornell’s decision was based upon a note by Greg Chartrand, who aptly asked: “Is the chatting activity that has been taking place a valid activity of Bitnet? I have been told that chatting per se is not part of this network’s charter. I have also been told that this is a network of Universities, and chatting is a natural healthy extension of a student’s computer activities.” (Greg Chartrand, cited in Condon 1986).

The universities belonging to BITNET consortium imposed it as almost the only device permitted on institutional systems, so that they can better monitor chat activities and prevent the implementation of less bandwidth-savvy monoserver systems: other chat systems were experimented but nipped in the bud by system

administrators. Kell accounts for the decline of Relay by pointing at its ever-growing popularity with users, generating a data traffic deemed futile, and therefore illegitimate by the heads of computing departments hosting the servers, because it was competing with the traffic generated by “legitimate” services – namely mailing lists and file transfers, the latter constituting the primary mission of the network – the network was sometimes so saturated that some messages took up to one month to get delivered. Thus, BITNET chat applications are an example of network appropriation by users. As Janet Abbate observed, like the ARPANET, BITNET and USENET were examples of how network users could take tools that had been designed for computation and adapt them for personal communication (Abbate 1999, 202).

Internet Relay Chat (IRC)

The “IRC” program was created by Jarkko Oikarinen, toward the end of August 1988, at the University of Oulu, Finland (Frechette and Rose 2007). Oikarinen was not satisfied with “rmsg” (*remote messaging [system]*), a program distributed with FreeBSD until 2014 (see <http://www.freshports.org/net/rmsg>) that Jyrki Kuoppala had just written at the Helsinki University of Technology – it notably lacked an implementation of the channel concept. He also bemoaned the bugs in “MUT” (Multi-User Talk), a program created by a fellow student at University of Oulu, Jukka Pihl, and based on a monoserver architecture. He therefore decided to write his own program and chose a distributed client-server architecture just like BITNET Relay. In fact, the core concepts and terminology of IRC were borrowed from Relay (nicknames, channels, “classes” of operators . . .). Even the main commands and their format were alike. Toward the middle of 1989, there were about 40 servers online, with an average of ten simultaneous users at peak hours. But contrary to BITNET Relay were there was a single network whose routing and coordination was decided and enforced by a central authority reflecting BITNET centralization, the IRC servers community quickly fragmented into different networks corresponding to different social and technical philosophies of what IRC and chatting should be like (see Latzko-Toth 2014).

As Elizabeth Reid put it, we saw the formation of what Hiltz and Turoff had termed “*electropolis*” (Hiltz and Turoff 1985, 688; cited in Reid 1991), namely electronic microsocieties emerging from the common use of CMC devices by hundreds or thousands of people. In July 1993, EFnet, the main IRC network at the time, spread in 48 countries representing approximately 20,000 regular users on 211 servers, mainly located in the United States and Europe (Anneling 1993). Some IRC networks, like Undernet, devised strategies to attract new users, such as mass-posting an installation script on Usenet newsgroups (Mirashi 1993; Mirashi and Brown 2003). Others, like DALnet, relied on user-friendly features (like channel and nickname registration) to seduce a less technically skilled user base (Dalila 2000).

The four main “generalist” IRC networks – EFnet, IRCnet, Undernet and DALnet – were well established at the turn of 1996, and their development hasn’t stopped ever since. They are not alone though. Numerous “specialized” networks have emerged, based on geography or topic. This phenomenon mirrored a trend toward specialization of IRC channels by theme and geographic area, fostering the

formation of local, multimodal communities periodically meeting up in “get-togethers.” Some are direct competitors in terms of user base, notably the gaming-oriented QuakeNet and GameSurge. A growing number of gamers started using IRC as a “back-channel” to swap hints, organize “LAN parties,” form clans and discuss their internal affairs (Morris 2003). While all major IRC networks have seen their user base decline with the rise of social media platforms, Freenode, aimed at the open source community, has grown and keeps a fairly large user base.

Instant Messaging (IM)

It was in the late 1980s that computer scientists laid the theoretical foundations of the instant messaging concept (calling it a “notification service”), in the frame of the Athena Project at MIT. This effort led to the first IM system, “Zephyr” (DellaFera et al. 1988), still in service today in several universities. As emphasized by Anthony DellaFera et al. (*ibid.*), the fundamental principle underlying this class of devices is that the flux of messages is centered around a *person* (via his/her identifier), rather than around a *place* (a physical server address). It’s up to the system to locate the recipient in the distributed environment. Together, these features form a communication structure which constitutes a specific participation framework (Goffman 1981; Marcoccia 2004).

Years later, in 1996, an Israeli company called Mirabilis launched the first commercially successful product based on this concept: ICQ (“I seek you”). Mirabilis labeled it “instant messaging” (IM) and filed a patent request in 1997. The patent was granted in 2002 to AOL, which had acquired the Israeli start-up in 1998. AOL’s pretention to the IM concept authorship is contested, notably by some PLATO *aficionados* (Dear 2002). Its competitors included Yahoo! messenger (1998) and Microsoft’s MSN (1999), as well as Lotus Sametime (1998) for the enterprise world. These systems ran on backends controlled by firms that also provided the proprietary client software to users. The dot-com boom and bust around the turn of the millennia led many to question the business models behind these services, as it was not clear how to extract a revenue stream from the device.

Platformization

After the dot-com boom, market concentration set in within the online services sector, establishing social networks as the most lucrative business model. On the one hand, social media profits are turned through datamining and profiling of users, which enhances targeted advertising to the same audience (Fuchs 2012). On the other hand, social media monopolies establish themselves as obligatory passage points for data traffic to and service provision by other actors, a leverage they can exploit for capital accumulation and market positioning. This process has been described as the “platformization” of Internet services (Gillespie 2010). Rather than a service in its own right, instant messaging is seen today as a core component

of social networking. While presence and contact management distinguished IM from other participation frameworks, the rise of social networking led to a hybridization with chat devices where they can scarcely be discussed as a distinct form of mediation, and therefore, sociality.

The XMPP (Extensible Messaging and Presence Protocol) family of standards was proposed by open-source advocates in 1999. The open protocol aimed to make proprietary Instant Messengers compatible through a common language, addressing the problem of market fragmentation where messages cannot cross corporate silos; to allow anybody to provide compatible IM services, decreasing the grip of social media monopolies on users; and to support the seamless integration of messaging into the widest possible range of technologies, encouraging hybridization. Proprietary IM operators progressively added various levels of XMPP support (Skype 2003; Google Talk 2005; Facebook Chat 2008; AOL 2008). Ironically, XMPP itself soon fell victim to fragmentation due to its many extensions. Its popularity fell from ten million users in 2003 – when it reportedly surpassed ICQ users – to a level where its relevance itself is debated (XMPP Standards Foundation 2003; Quora 2015). Monopolies progressively dropped XMPP compatibility, yet incompatible implementations still form the core of many popular services such as WhatsApp, PlayStation, or Facebook. A similar contemporary attempt is the Matrix protocol which pitched platformization as its ultimate goal from the very beginning, even though it is still unclear whether users really need IM interoperability (Weinberger 2014).

Ultimately, today users encounter chat integrated into social media platforms (such as Twitter, Skype and Facebook) or IM on mobile platforms (such as WhatsApp, Telegram, and Signal). While these are generally built with person-to-person communication in mind, over time group chat features have been added to their functions, which is exploited by users to form topical communities. Therefore, some IRC-like dynamics emerge against the script of these devices.

Chat as a Practice: Between Desire and Repression

Considering common threads in the history of chat, we can discern three patterns in the data. These observations are inspired by the *social history* approach, that is looking at historical developments from the point of view of common people: in this case, the users. Adopting a social history perspective often means that we have to make inferences, since archives tend to hold the views of more privileged actors.

First, it seems that a wide variety of users who had access to a range of different technologies were instantly inspired by the possibility to chat with their peers. We submit that chat manifests a nearly universal human desire for informal togetherness that moves freely between the profound and the trivial – a desire for unalienated sociality that manifests itself even through the primitive technological mediation that such technologies afford. In fact, it may well be the case that the magnetic attraction that chat seems to bestow on its users has to do with a tension between, on the one

hand, the rich repertoire of unregulated language use and the real-time situation which suggests presence; in contrast with the stark limitations imposed by alphanumeric writing and the technical mediation which emphasizes distance, on the other. Technical mediation arguably impoverishes social life by reducing its registers, but chat seems to reduce it to one of its most characteristic features: linguistic exchange. The expression “written conversation” already contains the core of such a semiotic paradox which can account for the appeal of chat.

Second, it seems that historically the chatting masses encountered repeated attempts to restrict, shape or shepherd their discourse. Whether because of resource limitations, policing requirements, the profit motive, or, which is more common, a combination of those, administrators persistently thrive to contain mass chat within defined bounds. Another tension might be at work here, between the idea that each technology serves an instrumental purpose, i.e. it is “for something,” and the fact that humans seem to value sociality for itself. The struggles around chat then exemplify a central contradiction of modernity, that between instrumental rationality pursued through an intentional technology and a Kantian ethical imperative where the other should not be merely a means but only an end. This may account for the fact that whatever the official reason or true motive of reformers, chat is often accused to be too trivial and too controversial at the same time. In another register such complaints echo distinctions between high culture and popular culture that allows administrators to assume a moral high ground vis-à-vis the (over)users of their networks.

Third, it seems that the progress of technical development and increasing social sophistication of Information and Communication Technologies did not have a decisive evolutionary effect on chat devices. We believe that this observation warrants attention in its own right precisely because of its ahistoricity. The historical invariance of social conflicts around chat devices suggests that the participation framework really exists as a unit of analysis in its own right. Whether we are looking at the earliest documented examples or recent controversies around opinion formation in general and bullying in particular on Twitter, some lines of tension remain the same. Furthermore, the problems are structured differently than for instance in the case of email and spam. Chat has been a persistent yet turbulent feature of digital technology landscapes throughout their historical trajectory, a property we theorized through referring to its “stickiness” (Herring 2004).

Conclusion

In this chapter, we tried to show that chat history is an often overlooked yet significant thread in the general trajectory of computer-mediated communication, characterized by a tension between users’ desire for unfettered sociality spanning a wide selection of registers and applications, and the ensuing repression by administrators seeking to channel mediated conversations. Users seem to take whatever digital resources they have access to and turn them into chat devices, in ways unexpected by system designers and administrators. But the very flexibility of digital

tools means that “misuses” can easily become the norm (Latzko-Toth et al. *forthcoming*) – and online chat “hacks” indeed played a key role in shaping the contemporary digital communication ecosystem.

References

- Abbate J (1999) Inventing the Internet. MIT Press, Cambridge
- Anneling E (1993) Countries on IRC. Document posted on Usenet group *alt.irc*, July 7, 1993. <http://www.nic.funet.fi/~irc/old.from.lut.gopher/Countries%20on%20IRC>
- Bartle R (1990) Early MUD history. Web page. <http://www.mud.co.uk/richard/mudhist.htm>
- Bays H (1998) Framing and face in internet exchanges: a socio-cognitive approach. *Linguistik Online* 1(1). <https://bop.unibe.ch/linguistik-online/article/view/1080/1769>
- Bechar-Israeli H (1995) From <Bonehead> to <cLoNehEAd>: nicknames, play, and identity on internet relay chat. *J Comput-Mediat Commun* 1(2)
- Best SJ, Krueger BS (2006) Online interactions and social capital: Distinguishing between new and existing ties. *Soc Sci Comput Rev* 24(4):395–410
- Bruckman A (1992) Identity workshop: emergent social and psychological phenomena in text-based virtual reality. Workshop documentation. <ftp://ftp.cc.gatech.edu/pub/people/asb/papers/identity-workshop.rtf>
- Condon C (1985) “Chat politics.” Nethistory: an informal history of BITNET and the internet. <http://web.archive.org/web/20091223032130/http://nethistory.dumbertia.com:80/chatpol.html>
- Condon C (1986) Bitnotes. Bitlist 3(8). <http://web.archive.org/web/20071013230604/http://nethistory.dumbertia.com/bitl32.html>
- Dalila (2000) DALNet History. Web page version 1.1.1. Last revised 25 Oct 2009. <http://docs.dal.net/docs/history.html>
- Danet B, Ruedenberg L, Rosenbaum-Tamari Y (1997). ‘Hmmm... Where’s that smoke coming from?’: Writing, play and performance on Internet Relay Chat. *J Comput-Mediat Comm* 2(4)
- Day J (2002) Origin of ‘talk’ command, email posted to Internet History mailing list, 2002/12/19. <http://www.postel.org/pipermail/internet-history/2002-December/000173.html>
- Dear B (2002) TERM-Talk: PLATO’s instant messaging. <http://www.platopeople.com/termtalk.html>
- Dear B (2017) The friendly orange glow: The story of the PLATO system and the dawn of cyberspace. Pantheon, New York
- DellaFera A, Eichin MW, French RS, Jedlinsky DC, Kohl JT, Sommerfeld WE (1988) The Zephyr notification service. Proceedings of the Usenix Technical Conference. https://www.researchgate.net/publication/220881387_The_Zephyr_Notification_Service
- Frechette I, Rose H (2007) Early IRC history. Web page. <http://www.efnet.org/?module=docs&doc=22>
- Fuchs C (2012) The political economy of privacy on Facebook. *Telev New Media* 13(2):139–159. <https://doi.org/10.1177/1527476411415699> http://fuchs.uti.at/wp-content/uploads/polec_FB.pdf
- Gillespie T (2010) The politics of ‘platforms’. *New Media Soc* 12(3):347–364. <https://doi.org/10.1177/1461444809342738>
- Goffman E (1981) Forms of talk. University of Pennsylvania Press, Philadelphia
- Hauben M, Hauben R (1997) Netizens: history and impact of the Net. First. Los Alamitos, Wiley
- Herring SC (2004) Slouching toward the ordinary: current trends in computer-mediated communication. *New Media Soc* 6(1):26–36
- Herring SC (ed) (1996) Computer-mediated communication: linguistic, social and cross-cultural perspectives. John Benjamins, Amsterdam
- Herring SC, Stein D, Virtanen T (eds) (2013) Pragmatics of computer-mediated communication. De Gruyter Mouton, Warsaw
- Hiltz SR, Turoff M (1978) The network nation: human communication via computer. Addison-Wesley, Reading

- Hiltz SR, Turoff M (1985) Structuring computer-mediated communication systems to avoid information overload. *Commun ACM* 28(7)
- Hiltz SR, Turoff M (1993) The network nation: human communication via computer. Revised edition. MIT Press, Cambridge
- Hudson JM, Bruckman A (2002) IRC Français: the creation of an internet-based SLA community. *Comput Assist Lang Learn (CALL)* 15(2):109–134
- Kell J (1987) RELAY: past, present, and future. Web page. <http://web.inter.nl.net/users/fred/relay/relihs.html>
- Kendall L (2002) Hanging out in the virtual pub: masculinities and relationships online. University of California Press, Berkeley
- Kerr EB, Hiltz SR (1982) Computer-mediated communication systems: status and evaluation. Academic, New York
- Latzko-Toth G (2014) Users as co-designers of software-based media: the co-construction of Internet Relay Chat. *Can J Commun* 39(4):577–596 <http://www.cjc-online.ca/index.php/journal/article/view/2783/2493>
- Latzko-Toth G (2010) Metaphors of synchrony: emergence and differentiation of online chat devices. *Bull Sci Technol Soc* 30(5):362–374
- Latzko-Toth G, Söderberg J, Millerand F, Jones S (forthcoming) Misuser innovations: the role of “misuses” and “misusers” in digital communication technologies. In: Ribes D, Vertesi J (eds) Digital STS: A Field Guide. Princeton University Press
- Loesch C von (2007) Whitepaper on Spyc. Design document. <http://www.psyc.eu/whitepaper/>
- Marcoccia M (2004) On-line polylogues: conversation structure and participation framework in internet newsgroups. *J Pragmat* 36(1):115–145
- Markham AN (1998) Life online: researching real experience in virtual space. AltaMira Press, Walnut Creek
- Mirashi M (1993) A few things. Email posted to Wastelanders, official Undernet mailing list, on May 17, 1993 (private archive)
- Mirashi M, Brown S (2003) The history of the Undernet. Web page. <http://www.user-com.undernet.org/documents/uhistory.php>
- Morris S (2003) WADs, bots and mods: multiplayer FPS games as co-creative media. DIGRA online: level up conference proceedings. <http://www.digra.org/dl/db/05150.21522.pdf>
- Ooi V (2002) Aspects of computer-mediated communication for research in corpus linguistics. In: Peters P, Collins P, Smith A (eds) New frontiers of corpus research. Rodopi, Amsterdam/New York, pp 91–104
- Pastinelli M (2007) Des souris, des hommes et des femmes au village global: Parole, pratiques identitaires et lien social dans un espace de bavardage électronique. Presses de l’Université Laval, Montreal
- Quan-Haase A (2008) Instant messaging on campus: use and integration in university students’ everyday communication. *Inf Soc* 24(2):105–115
- Quora (2015) Is XMPP still in wide use today given the popularity of web sockets today? User question. <https://www.quora.com/Is-XMPP-still-in-wide-use-today-given-the-popularity-of-web-sockets-today>
- Reed D (1992) RFC1324: a discussion on computer network conferencing. Request for comments. <http://tools.ietf.org/html/rfc1324>
- Reid EM (1991) Electropolis: communication and community on Internet Relay Chat. Honours thesis. University of Melbourne, Melbourne <http://www.irchelp.org/irchelp/communication-research/academic/academic-reid-e-electropolis-1991.html>
- Rintel S, Pittam J (1997) Strangers in a strange land: interaction management on Internet Relay Chat. *Hum Commun Res* 23(4):507–534
- Salus PH (1995) Casting the net: from Arpanet to Internet and beyond. Addison-Wesley, Reading
- Shefski B (1995) Interactive Internet: the insider’s guide to MUDs, MOOs, and IRC. Prima, Rocklin
- Stewart W (2000) Living internet. Web page. <http://www.livinginternet.com/>
- ten Have P (2000) Computer-mediated chat: ways of finding chat partners. *J Media Cult* 3(4)
- Vallee J, Lipinski HM, Miller RH (1974) Group communication through computers: design and use of the forum system, vol 1. Institute for the Future, Menlo Park

- Vallee J, Johansen R, Lipinski H, Spangler K, Wilson T, Hardy A (1975) Group communication through computers: pragmatics and dynamics, vol 3. Institute for the Future, Menlo Park
- Velkovska J (2004) Les formes de la sociabilité électronique: Une sociologie des activités d'écriture sur Internet. Doctoral dissertation in sociology. E.H.E.S.S, Paris
- Vleck T Van (2001) The history of electronic mail. Web page. <http://www.multicians.org/thvv/mail-history.html>
- Weinberger M (2014) Matrix wants to smash the walled gardens of messaging: introducing Matrix, a new messaging standard that wants to make IM, VoIP, and video as interoperable and open as email. Article in IT World from IDG. <https://www.itworld.com/article/2694500/unified-communications/matrix-wants-to-smash-the-walled-gardens-of-messaging.html>
- Werry C (1996) Linguistic and interactional features of Internet Relay Chat. In: Herring SC (ed) Computer-mediated communication: linguistic, social and cross-cultural perspectives. John Benjamins, Amsterdam, pp 47–63
- XMPP Standards Foundation (2003) Jabber instant messaging user base surpasses ICQ: fast-growing open network overtakes IM originator. Press release. <https://web.archive.org/web/20071103080257/http://www.xmpp.org/xsf/press/2003-09-22.shtml>
- Yardi S (2008) Whispers in the classroom. In: T. McPherson (ed) Digital youth, innovation, and the unexpected. MIT Press, Cambridge, pp 143–164
- Zhao S, Elesh D (2008) Copresence as ‘being with’: social contact in online public domains. Inf Commun Soc 11(4):565–583. <https://doi.org/10.1080/13691180801998995> <https://sci-hub.cc/10.1080/13691180801998995>



Diversity: The Military's Representation of Diversity on Social Media

22

Rupinder Mangat

Contents

Introduction	396
Diversity	396
The Importance of Diversity in Military Organizations	398
Social Media	399
The Importance of Social Media for Military Organizations	399
Case: The Canadian Armed Forces' Diversity Tweets	400
Method	401
Data	401
Discussion	406
Conclusion	408
Cross-References	410
References	410

Abstract

Diversity has become a buzzword for a lot of organizations today, including military organizations. For militaries that represent the increasingly multicultural populations of their states, diversity is not just a matter of reflecting and representing demographic diversity but also matter of shifting recruitment pools. One of the ways the military is attempting to reach diverse populations is through social media. This chapter emphasizes the value of both diversity and social media for organizations and analyzes how organizations are approaching both these phenomena – using social media to talk about diversity. The case studied is that of the Canadian Armed Forces' (CAF) use of Twitter to discuss diversity. Tweets from CAF Twitter accounts illustrate the organizational use of social media for diversity, followed by a discussion of how diversity is being communicated about online.

R. Mangat (✉)

Balsillie School of International Affairs, Wilfrid Laurier University, Waterloo, ON, Canada
e-mail: rmangat@balsillieschool.ca

Keywords

Diversity · Social media · Twitter · Military · Organizational communication

Introduction

As populations have become more mobile across borders, states and the organizations and institutions that represent them have come face-to-face with the need for diversity. States and organizations feel the need to reflect the sociocultural diversity around them. For militaries that represent the increasingly multicultural populations of their states, diversity is not just a matter of reflecting and representing demographic diversity but also a matter of shifting recruitment pools. The Canadian Armed Forces (hereafter, CAF) represent the highly multicultural state of Canada and feel the pressure to better represent the demographics. CAF also needs these diverse communities to fill its ranks as traditional pools of recruitment are getting smaller (Leuprecht 2009). Diversity is also important because it helps the organization develop from the inside out as people from varied social-cultural backgrounds often bring different perspectives and ways of doing things. Further, as the conflicts for which they prepare become more identity-based than state-based, organizations that represent the state need to do a better job of showing they are inclusive and understanding of the politics of identity.

Social media has increased the reach of states and organizations to the Internet realm and within this realm, to multiple and diverse populations. The advantage *and* disadvantage of social media is that not only can organizations talk about their position on and status with respect to diversity, but members of the public can talk to the organization about what its stance is on a variety of issues, including diversity, and through this the public can hold the organization accountable. While militaries, like most other bureaucratic organizations, have been late to join social media, they are increasingly present on these platforms. One of the most important ways that militaries are using social media now is to reach their increasingly diverse potential recruits.

This chapter provides an analysis of how the CAF discusses diversity on Twitter. The literature review helps define diversity and social media in the first part of the chapter as well as to better understand the gaps in CAF's diversity communication in the latter parts. The data comprises tweets collected from four main institutional Twitter accounts: the Canadian Armed Forces account, @CanadianForces; the Royal Canadian Air Force account, @RCAF_ARC; the Royal Canadian Navy account, @RCN_MRC; and the Canadian Army account, @CanadianArmy. The analysis describes the diversity perspective of the military and includes how it tackles diversity-related queries and comments from the public. Some of the gaps in the CAF's approach are noted

Diversity

Diversity, as important as it is as a concept, has also become a buzzword in recent years. Primarily, diversity is to do with differences among people, "differences between individuals on any attribute that might lead to the perception that another

person is different from self" (van Knippenberg et al. 2004, 1008). Many definitions of diversity often focus on demographics referring to matters of race, gender, religion, ethnicity, sexuality, and/or ability that frame individual differences. Demographic diversity is a valuable goal because the representation of people from a variety of social and cultural backgrounds within an organization allows people to see themselves as part of that organization. Being able to measure diversity based on factors such as race, gender, or ethnicity allows organizations to see the numbers on their performance vis-à-vis diversity. It can then become a mechanism to improve diversity in numbers as well as a starting point to develop tools to include more complex understandings of diversity.

The problem with the demographic perspective is that it differentiates among people based on factors that the individuals have not had a hand in choosing, so this method reduces individual identity to something fixed and rarely alterable. As Irwin (2009) notes, "The categories traditionally used to measure diversity do not really tell us much about diversity; in fact, traditional measures of diversity systematically obscure other categories of difference that may be more relevant to the group." So, while demographic approaches to diversity help organizations hold themselves accountable, a more qualitative and personalized perspective on diversity is something that organizations should consider moving toward. Diversity needs to be understood in its complexity of being "more about elements such as world views, belief systems, ethical frameworks, role obligations and other personal perspectives that reveal how individuals see themselves and perceive others and, more importantly, how they exercise independent reasoning and judgement" (Okros *in press*).

Diversity is an important factor for the growth and well-being of organizations because it leads to "improved decision-making, problem-solving, innovation and creativity, which provides firms with a strategic and competitive advantage" (Weigand 2007, 81). The inclusion of diversity into the organizational identity can have a positive impact on the organization when the differences among personnel are perceived as positive attributes that contribute to the organization rather than negative traits that strain the organization (Cole and Salimath 2013). By taking a positive institutional outlook on diversity, organizations can also encourage a more positive response to diversity initiatives among their personnel. The undeniable positive effects of diversity in organizations make the case for diversity stronger because in the face of globalized markets and economies, the presence of diverse organizational actors and/or stakeholders is almost inevitable.

While there are costs associated with building a diverse organization, organizations also stand to benefit immensely. For instance, the Canadian military has struggled with achieving complete bilingualism among its ranks despite being legally bound to be bilingual in English and French since the Official Languages Act of 1969 (Chouinard *in press*). This despite the fact that having French-speaking personnel has been useful on missions such as United Nations Stabilization Mission in Haiti. As Davis (2009, 431) notes, "Recent operational experiences (and in Afghanistan in particular) have highlighted the need for today's military leaders to adapt to new cultural settings and to effectively engage in a complexity of multicultural interactions within a dynamic landscape of potential belligerents and allies." For instance, an Urdu- and Punjabi-speaking Canadian soldier became the unofficial

liaison between Afghan and Canadian soldiers for the Canadian Operational Mentoring and Liaison Team in Kandahar (Vernon 2011). These bi- and multilingual personnel illustrate not only the opportunity of operational success abroad but also that of improving the legitimacy of CAF as a truly Canadian institution at home. Thus, because it is both inevitable and valuable, diversity is a phenomenon with which organizations need to contend.

The Importance of Diversity in Military Organizations

According to Soeters and van der Meulen (2007, 4–7), there are six reasons why the military organization needs to deal with diversity:

1. The rise of identity politics has empowered groups to demand that they be considered for service in the military at a level that is equal to those that are not necessarily “diverse.”
2. Including diverse groups can help the military maintain and grow its legitimacy in the public eye as it represents the diversity of national demographics.
3. With recruitment becoming increasingly difficult in some countries, the military can only benefit by opening itself to a broad range of people.
4. The diversification of the organization can help improve the effectiveness of military units by demanding from them an increased intercultural awareness and communication skills. These skills and awareness would benefit the military across a broad range of operations – both war and humanitarian – that often involve engaging with wide variety of people in complex environments. In many ways, working with diverse groups as a matter of everyday means that personnel are “training” even as they do their everyday tasks.
5. Following from the previous point, cultural sensitivity can help protect soldiers’ lives. If they take a sensitive and empathetic stance toward the local population, the local population is likely to respond favorably. This is essentially a restatement of the “winning hearts and minds” principle.
6. Dealing with diverse groups internally also prepares the personnel to work with a variety of partners on international missions.

The case for diversity in the Canadian military is even stronger because diversity is arguably one of the foundational characteristics of Canada. The Canadian Armed Forces (CAF), however, do not reflect the demographic makeup of Canada, even as they represent Canada and Canadians at home and abroad (Park 2008). As the then Chief of Defence Staff, General Hillier said, “The image of Canada that its military projects abroad must be as ethnically diverse as the country back home. . . . Our population has to look at us and see themselves in us” (Blanchfield 2005). CAF has been working on diversifying its ranks since the early 1970s. It is fair to say that the Canadian military is one of the most advanced in the world as far as its policies on demographic diversity are concerned. By 2001, all organizational barriers for women and homosexual personnel to participate in any of the job classifications were removed

(Winslow et al. 2007, 31). CAF recognizes the need for diverse personnel in the organization because of both internal and external pressures and logics but has thus far been unable to attract and/or retain the diverse personnel it needs in the numbers it wants.

Social Media

Social media are a “subset of Web 2.0 technologies . . . centred on the concept of user-generated content, online collaborations, information sharing, and collective intelligence . . . a many-to-many communications tool providing interactivity and content on demand” (Niekirk and Maharaj 2013, 1162). Social media and other Web 2.0 technologies are changing the way we work, play, and live our lives. Certainly, these technologies have changed how we do politics. The Arab Spring and the 2016 US presidential election are two examples of how social media played a role in shaping the political futures of states. These media have also grown to encompass nearly all aspects of life from shopping and chatting with friends and family to working and engaging political ideologies. Similar to the inevitability of diversity, social media have become a near unavoidable part of life.

The rise of social media, and other digital media and Internet communication technologies, has led to the rise of personalized politics defined by three main things: “an ethos of diversity and inclusiveness,” “crowd-sourced inclusive personal action frames,” and “participation . . . channeled through often dense social networks over which people can share their own stories and concerns” (Bennett 2012, 22). What participation means is that citizens and publics can call upon organizations and other entities to account for their position and actions on issues that matter to them personally, including issues of diversity and inclusiveness. This is particularly applicable to public entities such as government agencies that are expected to respond to citizens’ concerns. Thus, while private or nongovernment organizations might have the option to stay away from social media or be selective in their use, governments and public organizations and institutions are well-nigh required to be on social media in order to be responsive to their citizens.

The Importance of Social Media for Military Organizations

Warfare is changing due to various sociopolitical, economic, and environmental developments across the globe, and one of those developments is the emergence of social media. There are both external and internal rationales for the military to pay attention to and actively engage with social media. Cyberwarfare that was in the early years limited to information warfare and cyberattacks limited to military targets has now begun spreading into the civilian realm with corporations and private citizens being targeted (Niekirk and Maharaj 2013). Terrorist organizations have used social media to influence private citizens to gain support for their causes (Paul 2011). Thus, social media are a boon for those engaged in unconventional warfare

with state militaries. From an internal perspective, many military personnel use social media, but they can inadvertently affect operational security and effectiveness if they use these media carelessly. As Petit (2012, 21) notes, “To pervert Leon Trotsky’s axiom on war, ‘You may not be interested in social media, but social media is very interested in you.’” The military can no longer ignore social media.

Social media open both challenges and opportunities for the military. One of the main challenges that organizations face when using social media is the need to balance the transparent nature of the web with the need for some organizational confidentiality (Macnamara and Zerfass 2012). This tension is exponentially heightened for organizations like the military where keeping information classified is critical for operational success and personnel safety. The ephemeral nature of social media can lure users into complacency regarding the real and lasting consequences of sharing information online. Such carelessness could have grave consequences for the military. On the other hand, the military can enter social media with the excellent advantage of legitimacy. While other organizations might have to spend time earning credibility online, many militaries can go online with a pre-established sense of legitimacy. Further, the public is interested in what the military does to see how their tax dollars are being put to use and/or how their own are doing. As Caldwell (2008, 83) notes, “When it comes to men and women in uniform, they [the public] have a strong desire to hear their personal stories.” For the military then, social media are a matter of balancing operational security with furthering and maintaining their legitimacy in the public eye.

Case: The Canadian Armed Forces’ Diversity Tweets

To understand military engagement with diversity online, the Canadian Armed Forces’ use of Twitter is analyzed in this chapter. The Canadian Armed Forces (CAF), also called the Canadian Forces (CF), comprise primarily of the land, sea, and air services – the Canadian Army, the Royal Canadian Navy, and the Royal Canadian Air Force. The past, present, and future of the Canadian military, like any military organization, are deeply entwined with the government that directs it and the society which it serves and from which it arises. Canada and aspects of Canadian identity are shaped more by war than most Canadians realize whether it is War of 1812 that ignited the idea of a Canadian identity separate from the Great Britain or the emergence of social programs such as universal healthcare and employment insurance after World Wars (Morton 1992).

Because the Canadian military has almost always been deployed in multilateral coalitions or engaged in combat to support allies, Canadians have occasionally been suspicious that the Canadian military’s “allegiance is linked more to allies than to Canada” (Morton 1992, xii). This doubt provides another reason why the Canadian military must engage with social media to convince the public of the Canadianness of the institution. An important aspect of Canadian national identity is multiculturalism, so in proving their rootedness in Canadian values, the CAF needs to communicate to the public how it embodies the value of diversity. Social media provide a space for the military to communicate directly with the public and in an ongoing

manner. They also provide an opportunity for the public to engage with the military directly on a variety of issues including diversity.

Method

Tweets from four main CAF Twitter accounts – the Canadian Armed Forces account, @CanadianForces; the Royal Canadian Air Force account, @RCAF_ARC; the Royal Canadian Navy account, @RCN_MRC; and the Canadian Army account, @CanadianArmy – were collected. Over 14,000 tweets were collected between September 2015 and December 2015 as part of a dissertation on the military's use of social media as a strategic communication tool. For this chapter, the tweets that directly or indirectly referenced diversity were analyzed using grounded theory method (GTM). GTM is not just a method for data collection and analysis, it is also a theory development process where “multiple individual realities influenced by context” including the researcher’s knowledge and perspective are acknowledged (Mills, Bonner, and Francis 2006, 26). All tweets were open coded, and then categories were developed based on the relations among the emerging codes and the existing literature. As Glaser and Strauss (1967, 40) note, “As categories and properties emerge, develop in abstraction, and become related, their accumulating interrelations for an integrated central theoretical framework – the core of the emerging theory.” This orientation to an emerging core theory guided a constant moving up levels of abstraction – from codes to categories to theory.

Data

CAF usually tweets about diversity from a demographic perspective focusing on gender, race, ethnicity, etc. Tweets that acknowledge diversity explicitly are primarily shared during international celebrations such as Black History Month, International Women’s Day, or Asian Heritage Month or during domestic celebrations such as Canada’s National Aboriginal History Month. In these tweets, the diversity of the organization is not only acknowledged but also celebrated by the sharing of the achievements of these diverse groups within CAF.

@CanadianForces - 562370919327625217 - Mon Feb 02 22:04:10 2015 - RT @Army_CoMD:
The #BlackHistoryMonth is an opportunity to honour those who served this country from the beginning #StrongProudReady [http://...\[1\]](http://...[1])

This tweet is about Black History Month and Black Canadians who served in the CAF.

@CanadianArmy - 310038894517293056 - Fri Mar 08 14:46:47 2013 - Women in the Canadian military - we salute you! <http://goo.gl/81JA5> #internationalwomensday #army #cdnarmy
@cfoperations @canadianforces

This tweet, tweeted on International Women's Day, is about women's contribution to the CAF.

@RCAF_ARC - 598192110232346625 - Tue May 12 18:24:47 2015 - RT @CanadianForces: #TributeTuesday to Quan Jil Louie, @RCAF_ARC Flying Officer [#AsianHeritageMonth](http://ow.ly/MRFTI) <http://t.co/5StW...>

This tweet pays tribute to a CAF member of Asian descent during Asian Heritage Month.

The other time that diversity is occasionally brought up is when there is a tweet about job opportunities in the CAF; however, these tweets about jobs were usually tweeted by @ForcesJobs, the CAF's official recruitment account on Twitter, and then retweeted by one of the main four CAF accounts being analyzed in this chapter. The @ForcesJobs Twitter account has now been subsumed under the main @CanadianForces account.

@RCAF_ARC - 562406444461330433 - Tue Feb 03 00:25:20 2015 - RT @ForcesJobs: Black Canadians have a proud history of service with the #Forces #BlackHistoryMonth <http://ow.ly/Id4vy> <http://t.co/nQlq...>

This is a retweet of a @ForcesJobs tweet about the history of Black people serving with the CAF.

@RCN_MRC - 523208380098543616 - Fri Oct 17 20:26:13 2014 - RT @ForcesJobs: #FactFriday Every #occupation in the Forces is open to women. #diversity, #careers #FAQ Have questions? <http://t.co/DRAo...>

This is a retweet of a @ForcesJobs tweet about women being welcome in each occupation in the CAF, an option that most militaries around the world do not provide.

One of the primary demographics that the CAF is interested in recruiting is women. As of March 31, 2018, only 15% of the regular force were personnel who identified as women, reflecting little change in the numbers since 2016 when 14.4% of personnel identified as women (Akin 2018). The CAF's target is to reach 25% women by 2026 (Department of National Defence Canada 2018). Reaching that target means increasing recruitment and retention for a 10% increase in the numbers of women in the next 8 years. There are, therefore, quite a few tweets about the women who have been a part of the CAF historically, particularly during World War II, as well as current personnel who are women.

@CanadianArmy - 658433564824829952 - Mon Oct 26 00:02:49 2015 - #SundayNightFlick From 2008, interview w/ Gladys Power, last known surviving female #FWW veteran #womenhistory <https://amp.twimg.com/v/a9cf6876-02d8-4279-b418-d3d9dedf914a>

This is a tweet about a woman who served with the CAF as early as World War I.

@RCAF_ARC - 577228146526797824 - Sun Mar 15 22:01:29 2015 – Daphne Paterson 1st Canadian woman to qualify for commercial pilot's license. DND rejected her because she was a woman. #RCAF

This is a tweet about the Department of National Defence Canada rejecting Daphne Paterson's bid to join the RCAF because of her gender.

As the tweet above shows the history of gender inclusion in the CAF is far from rosy; nonetheless, the Canadian military has been a trailblazer with respect to integrating women in a variety of roles within the military. A lot of this pioneering, however, has remained at the level of policy. Applying the policy has been slow going, and recruitment and retention of women remains well under CAF's target of 25% women. CAF is, however, one of a handful of militaries in the world to have no service barriers for women. Women can choose any occupation in the Canadian military from vehicle technicians to combat divers and from intelligence officers to combat generals.

@CanadianArmy - 310126525984952320 - Fri Mar 08 20:35:00 2013 - RT @CFOperations: The @CanadianForces is one of the only militaries in the world that allows women to work any job <http://t.co/ZM95VDIHu> ...

This tweet informs the public how all careers in the CAF are open to women, that is, there are no gender barriers for women.

However, the positive work that CAF has done to integrate women has also had some failures. The most prominently tweeted about failure is the issue of sexual misconduct experienced by CAF personnel, a disproportionate number of whom are women. The date range of the tweets analyzed in this chapter is such that it captured the release of the Report of the External Review Authority on Sexual Misconduct and Sexual Harassment in the CAF in early 2015. Further, when the change of command from General Tom Lawson to then Lieutenant-General Jonathan Vance took place in mid-2015, General Vance was explicit about his desire to tackle the problem of sexual misconduct in the CAF. This led to some traditional news media coverage, but there were no further tweets about the issue. The event where the report was released was live tweeted by the CAF, sharing the findings of the inquiry as well as statements by some of the top-ranking CAF personnel.

@CanadianForces - 593819931340316672 - Thu Apr 30 16:51:18 2015 - We will be live-tweeting during the Release of the External Review Authority Report on Sexual Misconduct in the #CAF <http://pbs.twimg.com/media/CD2sFLLXIAAkLNb.jpg>

This tweet shares that the CAF will be live tweeting the release of the report on Sexual Misconduct in the CAF.

@CanadianForces - 593822600402440192 - Thu Apr 30 17:01:55 2015 - Sexual misconduct counter to our military ethos & the national values that the #CAF exists to uphold and to defend – CDS Lawson

This tweet shares the Chief of Defence Staff General Tom Lawson's statement regarding the report on Sexual Misconduct in the CAF.

@CanadianForces - 593824810679033857 - Thu Apr 30 17:10:42 2015 - I am committed to leading this change as part of the Command Team – CWO West

This tweet shares the Chief Warrant Officer Kevin West's statement regarding the report on Sexual Misconduct in the CAF.

Gender comes up in one other way for the CAF. Along with tweets about serving female CAF personnel, CAF also tweets about women who have been supporting the CAF as civilians, often writing letters to personnel or helping organize the war effort at home.

@CanadianForces - 556189794880196609 - Fri Jan 16 20:42:35 2015 - Gladys Osmond who wrote hundreds of thousands of handwritten letters to deployed #CAF troops has passed away #RIPGladys

This tweet pays tribute to Gladys Osmond, a Newfoundland who wrote to CAF troops posted across the world.

@CanadianArmy - 535520645942349824 - Thu Nov 20 19:50:46 2014 - RT
@TheCurrentCBC: Meet Veronica Foster, the face of Canada's war effort during #WW2:
<http://bit.ly/1yusRfD> SH #RonnietheBrenGunGirl <http...>

This tweet is about Veronica Foster, the woman whose photo assembling a Bren machine gun came to represent the work at home contributing to the war effort. Her image was similar to the US military's Rosie the Riveter poster. However, Rosie, unlike Ronnie the Bren gun girl, was fictional.

Women are, thus, acknowledged on social media both as military personnel and civilians working to support the military. Whether this will be sufficient to improve recruitment and retention remains to be seen. The less than 1% increase in the number of women personnel over 1 year does not appear to bode well for the 2026 goal to ensure that at least one in four members will be female. Whether social media have contributed to that increase or contributed to improving retention is difficult to gauge.

Very little is said on the support that the CAF have provided to their personnel who identify as lesbian, gay, bisexual, or transgender (hereafter, LGBT+), even though, the CAF had quite progressive policies on the inclusion of people who identify as LGBT+. It is likely that because of the intensely private nature of a person's sexuality and gender reassignment, these stories are rarely shared. Nonetheless, there are a few tweets about Pride events, which show the CAF's support for their LGBT+ personnel as well as for LGBT+ Canadians whom CAF serves.

@CanadianArmy - 344454041255940096 - Tue Jun 11 14:00:17 2013 - RT @LFWAPAO:
#Video: CFB Pride Flag <http://globalnews.ca/video/625016/cfb-pride-flag> #EdmPride
#PrideWeek #Pride #Flag #YEG

This is a tweet about Canadian Forces Base Edmonton (CFB Edmonton) raising the rainbow flag during Pride week. The hashtags mention Edmonton (airport code YEG) as well as Pride.

CAF's most liked and retweeted tweet was one that was issued a few hours after US President Donald Trump's tweet about banning transgender people from serving in the US military.

@CanadianForces - 890288099573600256 - Wed Jul 26 15:09:17 2017 - We welcome Cdns of all sexual orientations and gender identities. Join us! #DiversityIsOurStrength #ForcesJobs <http://ow.ly/7IVI30dW2xY>

This is a tweet about the Canadian Armed Forces welcoming LGBT Canadians to serve in the Canadian military. The hashtag #DiversityIsOurStrength shows that the CAF values diversity.

The image that accompanied the tweet was of a military band playing at a Pride parade with Pride flags fastened to their musical instruments. This tweet was hastened through the otherwise weeks-long approval process in a day in order to catch the spirit of the moment, and it broke previous departmental social media records with 3.7 million impressions and 5,000 clicks for the military recruiting website (Taylor-Vaisey 2018). The tweet gathered over 30,000 retweets and over 65,000 likes, a phenomenal achievement for CAF on this platform. The hashtag notes that for the CAF “diversity is our strength,” which furthers the impact of the tweet because it acknowledges not only LGBT+ Canadians but also other Canadians who might be otherwise diverse.

There are overlaps between the gender, racial, and ethnic aspects of diversity, of course, because women from a variety of races and ethnicities serve in the CAF, and certainly, there are other tweets where the CAF’s racial diversity is implicit.

@CanadianArmy - 426822814545350657 - Fri Jan 24 21:04:23 2014 - Pte Leung stands at attention during his Infantry Qualification parade practice in Wainwright, AB. #strongproudready <http://pbs.twimg.com/media/BexhFqOCEAAykTl.jpg>

This is a tweet about a qualification parade, and the image of Private Leung identifies him as someone of Asian descent; however, the tweet itself does not tag for diversity or Asian heritage.

Tweets like the one above, that is, tweets that do not point out diversity explicitly, might abound. Many tweets that contain images of CAF personnel training or participating in active operations may be quite diverse, but it is difficult to tell with the uniform and face paint. On the one hand, this might appear as a lack of diversity, but on the other hand, emphasizing the “diversity” of a CAF member might work to create a sense of difference instead of unity among the personnel. Noting differences for the sake of promoting diversity can become problematic because of the tokenism inherent in that approach. Thus, the celebration of diversity

might be best restricted to days, months, and events that celebrate different ethnic and/or gender groups with other diversity-related tweets tweeted if someone accomplishes something diversity related.

@RCN_MRC - 609063063615098881 - Thu Jun 11 18:22:04 2015 - RT @UAlberta: Royal Canadian Navy's first female rear-admiral receives honorary degree. [#UAlberta15](http://ow.ly/O8ho0) <http://t.co/Dfh4...>

This retweet celebrates Rear Admiral Jennifer Bennett receiving an honorary degree. Rear Admiral Bennett was also the RCN's first female Rear Admiral.

The other way that the issue of diversity is sometimes raised is by the public. Members of the public can tweet at the CAF accounts to talk about diversity in the military. CAF's response tweets then address diversity in answering individual questions.

@RCN_MRC - 530796318185508864 - Fri Nov 07 18:57:58 2014 - @aalooamey Thank you for your question. The Canadian Armed Forces now allow both Sikh men and women to wear turbans while serving.

Twitter user @aalooamey had originally tweeted the following question for the RCN: “@RCN_MRC has there recently been a Royal Canadian Navy turban accommodation policy change for Sikh women?” In a further tweet, the RCN noted that Master Seaman Wanda McDonald was the first Sikh woman to wear the turban in the RCN.

This is where we see the democratic empowerment of the public and the dialogic aspect of social media come into play. A Twitter user asked a question about religious accommodation, and the Royal Canadian Navy answered. This kind of accountability is rare, if not impossible, through traditional media. Such direct engagement can help with rooting the military into society and provide a sense of community for the public.

Discussion

The Canadian military's tweets about diversity are focused on demographic differences and tend to be concentrated around special days and/or occasions such as mentioning female CAF personnel on International Women's Day or mentioning Indigenous personnel on Canada's National Indigenous History Month. This indicates that the CAF take a demographic approach to diversity. It is, however, important to note that most of the tweets analyzed here were generated under the Harper government, which had its own communication agenda that had filtered down to Canadian government departments, including the Department of National Defence and the Canadian Armed Forces (Mangat 2018b). The problem with the demographic approach is that it can be seen as simplistic and, therefore, lack impact. Pointing to a Black person or a woman as an example of diversity can appear

reductive not only for the persons being mentioned but also for those being addressed because this diversity appears too much like tokenism.

CAF needs to continue acknowledging events that are socially and politically important and celebrate its diverse personnel through, for instance, tweets appreciating the military and other contributions of Black Canadians during Black History Month or tweets that congratulate the first woman to make it to the general officer rank in the Canadian combat arms, Brigadier-General Jennie Carignan.

CAF can, however, improve its social media messaging on diversity in two ways: tweeting about demographically diverse personnel for their individual interests and tweeting about individual personnel for their diverse interests. The Canadian Army tweet about Pte Leung mentioned above, for instance, noted that he was participating in parade practice without tagging the tweet with hashtags mentioning diversity or the private's ethnic heritage. A tweet from the RCAF, on the other hand, shares the link to a story about two brothers who are both CAF personnel and who compete in Masters Athletics events as sprinters indicating the diversity of their interests. By focusing on individual interests along with demographic variance, CAF can move away from simplistic representations to provide a more complex look at the diversity of its personnel.

The military also needs to think about diversity of identity instead of demographic diversity because security is shifting from being state-based security to a human security model (Okros 2009). Understanding diversity is only made more difficult by the increasing complexity of identity. Talk about diversity has to broaden and become more inclusive in scope while also acknowledging and respecting the differences that make up individual identities. The 2016 Canadian Armed Forces Diversity Strategy, while it acknowledges demographic diversity, also appears to move toward a more inclusive definition of diversity: "diversity means respect for and appreciation of differences in ethnicity, language, gender, age, national origin, disabilities, sexual orientation, education, and religion. It is about understanding each other and moving beyond simple tolerance to embracing, celebrating, and integrating the rich dimensions of diversity within each individual" (Department of National Defence Canada 2016, 1/14).

By addressing the "diversity within each individual," CAF opens up space for intersectional and complex identities that are created from non-visible similarities and differences and chosen identities (Mangat et al. *in press*). Opening up the complex aspects of identity and the diversity of individual identities will not only allow CAF to tweet about diversity in a complex and sophisticated manner but also tweet about it more frequently. Because social media timelines are constantly in motion, the limited tweets about diversity might not be viewed by the CAF's followers. By increasing the frequency and complexity of diversity-related tweets, the Canadian military can potentially reach more people simply by virtue of posting more content that will appear in their followers' timelines more often.

Moving away from the prescriptive and/or normative model is certainly a big ask of an organization that is rooted in fairly rigid hierarchies driven by strict discipline; however, the organization will need to become more flexible as it moves toward more and more complex, asymmetrical, unconventional, hybrid

wars against numerous networked and nebulous enemies. As Last (2009, 375–376) notes, “Increasingly, what we are trying to secure is identity rather than territory, and our identity is threatened in ways that cannot be defended by force in an interconnected world.” Defending the state identity will require that the Canadian military mirror the reality of the Canadian identity. CAF’s success on social media will require reflection on how the organization fits within the larger social context and education of personnel so they can respond to social changes in a proficient manner (Macnamara and Zerfass 2012). With an increasing immigrant and diasporic population and a greater ratio of women in the domestic population, the Canadian Armed Forces need to reflect this change in order to reach and remain relevant to the public.

Conclusion

While field operations will continue to have a role to play for the armed forces, the military needs to adapt to the information-based nature of war. In this era of unconventional warfare, Betz (2008, 511) notes that “we do not focus enough effort on winning and maintaining the hearts and minds of the most critical and accessible population: *our own*” [original emphasis]. As Berenger (2013, 89) explains, two-way communication between the military and the public through social media allows leaders to “build community involvement and ‘ownership.’” Encouraging community involvement and “ownership” among the domestic public is important for the military in order to maintain organizational legitimacy and develop future recruitment pools.

CAF’s use of Twitter is limited not only by the affordances of the platform but also by the bureaucratic requirements placed upon a military that serves a democratic state. In democracies, militaries must follow the principle of civilian control over the military, a principle that places strategic decision-making in the hands of the elected government while the military takes an advisory role. This control can extend to what the military communicates, especially to the public. If a military statement goes against the government’s statement on an issue, it could lead to divisiveness among the public and reduce government credibility. On the issue of diversity, the military is similarly restricted by what the government of the moment expects. The preceding analysis came from tweets generated under the Harper government. Under the Trudeau government, at a quick glance, the diversity tweets appear to be more frequent. While frequency is no marker of quality, perhaps future research can analyze how military social media communication varies based on the interests of the party chosen to govern.

The unpredictable nature of social media also creates challenges for organizations. Any social media campaign can go as planned or in a completely unexpected direction. For instance, financial institution JPMorgan Chase’s #AskJPM hashtag about career advice instead had people asking questions like this: “What section of the poor & disenfranchised have you yet to exploit for profit, & how are you working to address that?” (Greenhouse 2013). The Canadian military also had to engage in

some image management when some personnel posted racist comments about the newly appointed Minister of National Defence on its French language Facebook page (Pugliese 2015). What made this incident worse was that Minister Harjit Singh Sajjan had previously served in the Canadian military. CAF was quick to delete the racist posts before any media outlet could note the content or get screenshots, and this could be considered a “win” for the social media team as it likely prevented a drawn-out scandal for the military. The incident, nonetheless, exposed the gap between the institutional mission on diversity and its application on ground. While social media platforms can be a place for the organization to reach out to diverse groups, they can also reveal underlying problems in the organization that could turn people away.

With all the advantages and risks they present, social media have increased the reach of organizations to the virtual realm and within this realm, to multiple and diverse populations. These media also provide a space for the military to engage with the public directly, and many militaries including the Canadian Armed Forces have joined various platforms to do so (Mangat 2018a). The matter of diversity is important to the Canadian national identity as well as for the military’s current and future members; therefore, CAF engages with it through various channels including social media. Through these platforms, the military communicates to establish and maintain its place in the sociocultural, historical, and political life of the state and its public. CAF gets to represent its Canadianness to its followers by noting the wars it has fought and peacekeeping missions it has gone on for Canada. Tweeting about diversity is another way for CAF to show that it reflects the Canadian state. While CAF’s efforts thus far have been commendable as always, there remains room for improvement in the form of tackling the matter of diversity and inclusion in a more complex manner and with greater frequency.

Social media constitute only one avenue where CAF is making efforts to speak of diversity and inclusion. The ephemeral nature of these media means that the messages might reach only a few followers or be lost in the virtual ether. There is a lot of content online, so the possibility of impact on the intended audience is probably low. The bureaucratic nature of the military, like any state-based public organization, means that most organizational tweets usually lack the spontaneity that is a hallmark of platforms like Twitter. The practiced content of the tweets will likely have limited impact in a media-rich environment hungry for authenticity. On the other hand, what CAF is performing online is professionalism, so a restrained conduct can add to its credibility. The presence of the CAF on these media, however, also makes room for the audiences to reach out to the organization. The fact that the military is present online and will provide a response to any questions that any members of the public might have is revolutionary. As the tweeted question about Sikh personnel wearing turbans shows, the public can and will ask the military to account for its policies and actions including issues such as diversity.

Accessibility and inclusiveness are the most important part of the Canadian Armed Forces’ presence online. The impact on diversity-oriented hiring or inclusiveness within the organization is going to be difficult to gauge with any sort of certainty, but the fact that the organization has provided a space where it can be held

publicly accountable is valuable. Even though it is nearly impossible to measure the impact of CAF's #diversity tweets, that the organization is tweeting about the issue at all is incredibly important, especially in light of the divisive rhetoric currently prevailing in the state about immigrants and other Others. By providing proof of how a diverse group of people have served with the military, CAF helps to illuminate the contributions of Othered peoples to the state and the value they have added and continue to add to Canada. Through its presence on social media, the Canadian military, thus, makes a space for itself and diverse groups in online public discourse on Canada.

Cross-References

- [Affect and the Expression of Emotions on the Internet: An Overview of Current Research](#)
- [An Obscure Object of Communicational Desire: The Untold Story of Online Chat](#)
- [How Computer Networks Became Social](#)
- [How to Compare Different Social Media: A Conceptual and Technical Framework](#)
- [New Media, Religion, and Politics: A Comparative Investigation into the Dialogue Between the Religious and the Secular in France and in Vietnam](#)

References

- Akin D (2018) Canada's Armed Forces, struggling to hit diversity goals, turns to new digital recruiting tools. Global News. <https://globalnews.ca/news/4450927/canada-armed-forces-diversity-goals-digital-recruiting/>. Accessed 4 Feb 2019
- Bennett WL (2012) The personalization of politics: political identity, social media, and changing patterns of participation. *Ann Am Acad Pol Soc Sci* 644:20–39. <https://doi.org/10.1177/0002716212451428>
- Berenger RD (2013) Introduction: Social media go to war. In: Berenger RD (ed) *Social media go to war: rage, rebellion, and revolution in the age of twitter*. Marquette Books LLC, Spokane, WA, pp 1–16
- Betz D (2008) The virtual dimension of contemporary insurgency and counterinsurgency. *Small Wars Insurgencies* 19:510–540. <https://doi.org/10.1080/09592310802462273>
- Blanchfield M (2005) Forces hiring to mirror Canada's diversity: defence Chief Hillier promises new vision for country's military. *Ottawa Citizen*
- Caldwell IV WG (2008) Changing the organizational culture. *Small Wars Journal Blog*. <http://smallwarsjournal.com/blog/changing-the-organizational-culture-updated>. Accessed 26 Nov 2014
- Chouinard S (in press) Francophone inclusion and bilingualism in the Canadian Armed Forces. In: Edgar A, Mangat R, Momani B (eds) *Strengthening the Canadian Armed Forces through diversity and inclusion*. University of Toronto Press, Toronto.

- Cole BM, Salimath MS (2013) Diversity identity management: an organizational perspective. *J Bus Ethics* 116:151–161. <https://doi.org/10.1007/s10551-012-1466-4>
- Davis KD (2009) Sex, gender and cultural intelligence in the Canadian Forces. *Commonwealth Comp Polit* 47:430–455. <https://doi.org/10.1080/14662040903375091>
- Department of National Defence Canada (2016) Canadian Armed Forces diversity strategy. Department of National Defence Canada, Ottawa, Canada
- Department of National Defence Canada (2018) Backgrounder: women in the Canadian Armed Forces. Government of Canada. <http://www.forces.gc.ca/en/news/article.page?doc=women-in-the-canadian-armed-forces/izkjzzeu>. Accessed 4 Feb 2019
- Glaser BG, Strauss AL (1967) The discovery of grounded theory: Strategies for qualitative research. Aldine Publishing Company, Chicago, IL
- Greenhouse E (2013) JPMorgan's Twitter mistake. *The New Yorker*. <http://www.newyorker.com/business/currency/jpmorgans-twitter-mistake>. Accessed 9 Aug 2017
- Irwin A (2009) Diversity in the Canadian Forces: lessons from Afghanistan. *Commonwealth Comp Polit* 47:494–505. <https://doi.org/10.1080/14662040903375067>
- Leuprecht C (2009) Diversity as strategy: democracy's ultimate litmus test. *Commonwealth Comp Polit* 47:559–579. <https://doi.org/10.1080/14662040903388383>
- Macnamara J, Zerfass A (2012) Social media communication in organizations: The challenges of balancing openness, strategy, and management. *International Journal of Strategic Communication* 6:287–308. <https://doi.org/10.1080/1553118X.2012.711402>
- Mangat R (2018a) Tweeting generals: making the case for increased public-military engagement through social media. In: Bray P, Rzepecka M (eds) *Communication and conflict in multiple settings*. Brill-Rodopi, Leiden, pp 205–231
- Mangat R (2018b) Tweeting strategy: military social media use as strategic communication. Dissertation, Wilfrid Laurier University
- Mangat R, Momani B, Edgar A (in press) Unpacking diversity and inclusion. In: Edgar A, Mangat R, Momani B (eds) *Strengthening the Canadian Armed Forces through diversity and inclusion*. University of Toronto Press, Toronto.
- Mills J, Bonner A, Francis K (2006) The development of constructivist grounded theory. *Int J Qual Methods* 5:25–35. <https://doi.org/10.1177/160940690600500103>
- Morton D (1992) *A military history of Canada: From Champlain to the Gulf War*, 3rd ed. McClelland & Stewart, Toronto, ON
- Niekirk BV, Maharaj M (2013) Social media and information conflict. *Int J Commun* 7:1162–1184
- Okros A (2009) Rethinking diversity and security. *Commonwealth Comp Polit* 47:346–373. <https://doi.org/10.1080/14662040903362990>
- Okros A (in press) Introspection on diversity in the Canadian Armed Forces. In: Edgar A, Mangat R, Momani B (eds) *Strengthening the Canadian Armed Forces through diversity and inclusion*. University of Toronto Press, Toronto.
- Park J (2008) *A profile of the Canadian Forces*. Statistics Canada, Ottawa
- Paul C (2011) *Strategic communication: origins, concepts, and current debates*. Praeger, Santa Barbara
- Petit B (2012) Social media and unconventional warfare. *Special Warf* 25:20–28
- Pugliese D (2015) Warrant Officer's racist comments about new defence minister generates headlines in Canada and India. *Ottawa Citizen*. <http://ottawacitizen.com/news/national/defence-watch/warrant-officers-racist-comments-about-new-defence-minister-generates-head-lines-in-canada-and-india>. Accessed 27 Nov 2015
- Soeters J, van der Meulen J (eds) (2007) *Cultural diversity in the armed forces: an international comparison*. Routledge, London, UK
- Taylor-Vaisey N (2018) How Canada's military went viral after Donald Trump's anti-transgender tweets. *Macleans*. <https://www.macleans.ca/news/canada/how-canadas-military-went-viral-after-donald-trumps-anti-transgender-tweets/>. Accessed 4 Feb 2019

- van Knippenberg D, De Dreu CKW, Homan AC (2004) Work group diversity and group performance: an integrative model and research agenda. *J Appl Psychol* 89:1008–1022. <https://doi.org/10.1037/0021-9010.89.6.1008>
- Vernon M (2011) Desert lions: Canadian Forces mentors in Kandahar. Canadian Army, Canada
- Weigand RA (2007) Organizational diversity, profits and returns in U.S. firms. *Probl Perspect Manag* 5:69–83
- Winslow D, Browne P, Febbraro A (2007) Diversity in the Canadian Forces. In: Soeters J, van der Meulen J (eds) Cultural diversity in the armed forces: an international comparison. Routledge, London, UK, pp 31–47



Privacy and the Ethics of Disability Research: Changing Perceptions of Privacy and Smartphone Use

23

Leanne McRae, Katie Ellis, Mike Kent, and Kathryn Locke

Contents

Introduction	414
Digital Disability: Smartphones as Assistive Technology	415
Disability and Privacy	418
Ethical Considerations in Research	420
Conclusion	425
References	426

Abstract

For people with disabilities, the smartphone offers ways to radically rewrite and transform everyday life with the design of accessible interfaces, platforms, and software. Research into these experiences are limited. In Perth, Western Australia, a research project into how people with disabilities use their smartphones to navigate around urban spaces struck difficulty when participants who had signed up for the study were fully briefed on the project receiving the highest level of ethics clearance and who were able to opt out at any stage resisted having data collected that would track how they used their phones for the purposes of understanding their movement around their environment. The impact of a series of Facebook privacy scandals – not least of which was the Cambridge Analytica incident – along with other recent privacy violation revelations such as those made by Edward Snowden all served to make participants wary of sharing their data with the researchers. People with disabilities consistently engage in privacy management in their daily lives as they encounter professionals, friends, and strangers who press up against the privacy barriers that able-bodied people take for granted. While Big Data and digital ethnographies are seen to be a boon for

L. McRae · K. Ellis · M. Kent (✉) · K. Locke

Curtin Critical Disability Studies Network, Curtin University, Bentley, WA, Australia

e-mail: Leanne.Mcrae@curtin.edu.au; katie.ellis@curtin.edu.au; M.Kent@curtin.edu.au;

K.Locke@exchange.curtin.edu.au

contemporary researchers who might leverage the detailed and diverse data that digital devices can track and tether, this paper considers the intersections of data, privacy, disability, and digitization to unpack the anxieties and ambivalences of using smart systems to conduct research.

Keywords

Disability · Mobile technology · App-based research · Research ethics · Privacy · Consent

Introduction

People with disability exist on the cusp of private and public interest. Their embodiment is often framed by a public discourse of “abnormality” which sparks intrusive and often offensive gazes. People with disability are also often subjected to inquiry and engagement from others who codify their embodiment as outside, separate, and deviant and therefore subjected to critique and concern. Questions about what condition they have, how they got like that, as well as how they manage in everyday life are frequent for many people with disability, making everyday violations of their independence and privacy a constant site for negotiation and border protection. For some, this independence is paid for with privacy. For example, an accessible parking permit facilitates ease of access yet also is subject to the stares and judgements of the wider population who frequently question whether the permit holder is a worthy recipient. Furthermore, many people with disability exist in fluctuating privacy portals where they may not have control over the operation of particular everyday functions – toileting, for example – that form the crux of personal privacy. As such, they exist in a fluid and morphing privacy context where nuanced understandings of embodied boundaries, humility and pride, normality, and excessiveness collide.

At the same time, society in general is undergoing a significant cultural shift regarding privacy and digital surveillance. Initially we seemed to be reasonably relaxed in sharing our personal data and ethnographic insights, and automated digital ethnographic research methods appeared to be a useful approach to acquire these. However, in the wake of Cambridge Analytica and other Facebook privacy breaches, there has emerged an increasing and consistent awareness that our personal information and online profiles are not as private as we thought they were. In addition, advances in mobile technology such as smartphones, while making our lives easier, have also enabled greater sophistication in profiling. While this has negative connotations, such as in the privacy breaches outlined above, there are also positive benefits to understanding more about who uses what technology, when they use it, and, importantly, why. As such, alternative methods of personal data collection are required. Prior to these scandals, automated digital ethnographic research methods appeared to be a useful approach to acquire data and ethnographic insights. Chib and Jiang (2014), Naftali and Findlater (2014), and Kane et al. (2009) each highlight the need for “real-life” analysis of mobile technology, particularly smartphones. There is a consistent awareness across these studies that more innovative methods of data

collection are required to capture the experiences of people with a variety of impairments, smartphone literacy, and confidence in urban space. While Naftali and Findlater (2014) suggest the use of a standardized performance assessment of mobile use capabilities to ensure validity of data, Jacquemard et al. (2014) recommend an automated data recording process.

In particular, there are benefits to being able to capture – and analyze – the experiences of people with a variety of disabilities with regard to their smartphone literacy and confidence when using this new technology to interact within urban environments. As such, an Android research app – the Urban Spaces app – was designed by our research team to explore how people with disabilities use their mobile phones to navigate and interact with the urban environment. Several people with disability were recruited to take part in its initial trial which formed part of a larger research project entitled “Using Smartphones to Navigate Urban Spaces: People with Disabilities and the Role of Mobile Technologies in Western Australia.” The app exceeded the basic requirements needed for people with disability to effectively use it, and Media Access Australia awarded it an AAA Web Content Accessibility Guidelines (WCAG) 2.0 rating. As such, the participants were easily able to install and access the app. To mitigate any privacy concerns, what the app would capture – and why – was clearly explained, therefore reassuring participants that the information would be accessible only to the research team and, importantly, that they could withdraw from the project at any time. However, as will be argued in this chapter, despite the project’s focus on both accessibility and transparency, it was found that users were reluctant to participate, largely because of privacy concerns.

Drawing on the findings from the pilot stage of this project, this chapter presents an examination of privacy issues in smartphone and app-based research focusing in particular on the concerns of people with disability. Specifically, this chapter looks at why users resisted use of our app, what it means within disability research, and more broadly how this can be situated and understood in an age of mass ubiquitous surveillance through mobile devices and social media. The chapter will conclude with broader recommendations for supporting people with disability through smartphone technology.

Digital Disability: Smartphones as Assistive Technology

Disability is typically thought of as a medical problem existing within an individual’s damaged body. However, during the 1970s, activists in the UK argued that disability was instead socially created by inaccessible attitudes, public places, and modes of communication (Union of the Physically Impaired Against Segregation 1976). Approaching disability in this way, wheelchair users are understood as disabled by the absence of ramps, not by an inability to walk. Similarly, people who cannot see are disabled when visual information is not communicated in an accessible alternative format such as Braille or audio. As society has become more dependent on the Internet and digital technologies, Australian disability scholars

Gerard Goggin and Christopher Newell (2003) have added digital disability insights to this discussion of in/accessibility. They argued that until disability is recognized as a cultural identity in the same way as race and gender, digital technologies will continue to be inaccessible despite their proven potential to create a more inclusive environment for people with disability. Society's attitudes to digital technologies therefore play a key role in the social disablement, or enablement, of people with disability – a situation Ellis and Kent explored in their 2008 research which mapped how early versions of the iTunes platform were inaccessible to blind users despite being hailed as radically innovative and useful in a range of contexts, particularly education (Ellis and Kent 2008). Attitudes therefore play a key role in the social disablement of people who have impairments. Apple has addressed these issues and have transformed their platforms and the devices they operate on into one of the more useful accessibility tools in deaf and blind/sight-impaired communities. The iPhone (and the Android) has become a default device, enabling people with disabilities to expand their accessibility options in highly flexible, mobile ways.

A significant body of critical disability research has developed over the past 15 years concerning the relationship between people with disability and digital technology (Boellstorff 2008; Davidson 2008; Dobransky and Hargittai 2006; Ginsburg 2012; Goggin 2006, 2011; Goggin and Newell 2003; Goggin and Noonan 2006; Lupton and Seymour 2000), including a substantial body of work by the authors of this chapter (Ellis and Kent 2008, 2011; Ellis et al. 2015, 2017; McRae et al. 2018). For example, Lupton and Seymour's (2000) seminal study of people with disability's use of technology – broadly defined as tools that assist human action – continues to offer important insights regarding the ways technology allows people to "transcend" disability but equally marks disabled people as "different." However, of note is that their study – as well as much of the research in this area – has taken place prior to the smartphone generation of mobile technology. As such, the impact of smartphone technology for people with disability remains under researched. In the current technological climate, people with disability are no longer marked as different as they can use their smartphones as a form of assistive technology in the same way as the rest of the population (McNaughton and Light 2013).

The pervasiveness and ubiquitous use of mobile touch screen devices, particularly smartphones, provides an access for people with disability that is free of the stigmatization of earlier, less mainstream assistive technologies (Stephenson and Limbrick 2015). The further advantage of device usage for accessibility purposes is the range and ease of use of available apps (Douglas et al. 2012). While research in this area is still in its infancy, preliminary studies suggest the impact these technologies are already having in terms of independence, communication, and leisure (Kouroupetroglou et al. 2017) and the potential to increase these with apps that are designed specifically with these users in mind (Stephenson and Limbrick 2015).

The impact of smartphone technology for people with disability remains under researched. What exists expands across two main research areas – the design of mobile/mobile technology for people with disability (both the application of universal design principles and the use of assistive technology) and the mobile as a socially empowering device. The evidence is, to date, mainly concentrated on how

smartphones may aid those with visual and hearing disabilities. However, of note, is a growing body of research on the relationship between smartphones and their benefits for people with intellectual and developmental disabilities (Doughty 2011; Abbott et al. 2013).

In general, the research suggests people with disability are afforded less access to smartphones and other similar technologies. With regard to social inclusion, there exists a significant body of critiques that highlights the “digital divide,” the exacerbation of existing power differentials, and the socially disabling impact of mobile technology for people with disability (Chib and Jiang 2014; Vicary and Gomez 2012). There are also research contributions on the relationship between young people with disability and mobile use (Söderström 2009).

However, there is limited research to date regarding if and how people with disability use modern smartphone technology to access urban spaces. That is, general accessibility issues have been critiqued, but these have not often focussed on how smartphones can assist with this. For example, earlier quantitative research includes Matthews et al.’s (2003) GPS mapping of wheelchair users in Northamptonshire in the UK and Casas’ (2007) tracking of access for people with disability via a “one-day travel diary” using GIS mapping across the Buffalo-Niagara region in New York. Other studies have looked at urban access issues for both people with disability and the elderly (Schmöcker et al. 2005). However, a strong link to how smartphone technology can be used to facilitate this urban access was again missing.

Similarly, Taylor and Józefowicz’s (2012) study provides a focused analysis of people with disability’s experiences – specifically in relation to access and mobility for recreation and leisure – of urban space via an extensive empirical study in the city of Bydgoszcz, Poland. They recognize that travel behavior is the resultant of “three kinds of variables referring to a spatial component, a socio-economic component and a personality component” and that the experiences of one participant may not reflect/represent the accessibility of a space/place for all people with disability (Taylor and Józefowicz 2012). Yet, while this provides important comparative data on the use and issues of access for those with and without disability, again the use of mobile phones within these experiences is not highlighted in the study. There are some notable exceptions. For example, projects such as the Megafone smartphone app aim to capture the experiences of urban space access – by both people with disability and other people marginalized within society – with the aim of creating a “map” of current use and inaccessibility (Montreal In/Accessible 2014).

Previous research focusing on mobile use and disability demonstrates a consistent awareness that both context and methodology impact upon the responses of participants (Kane et al. 2009). Automated data capture of large portions of a person’s life via mobile and wearable technologies (so-called Lifelogging), as highlighted by Jacquemard et al. (2014), eliminates some of these issues (Jacquemard et al. 2014). Given the challenges inherent in articulating, understanding, and interpreting the experiences of people with disability (particularly to those without the same impairment), data capture is an important tool in digital ethnography. Our app tracked a participants’ phone use, including which app is being used and where at regular intervals. However, there were issues with the use of the app that limited the data

collected from the study, some of which were identified as privacy, participation, technological, and GPS inconsistencies (Ellis et al. 2017). As noted, privacy was of significant concern to our cohort of participants with disability.

Disability and Privacy

Privacy and access to information are of growing concern among global citizens, with these issues becoming increasingly complex as mobile networking technologies and our ability to harness them (for good or ill) develops. These same technologies not only allow us to approach research in new and novel ways, with self-administered research applications requiring little to no contact between participant and researchers or research teams, but also present an increasingly complex array of challenges, particularly so in regard to informed consent (Moore et al. 2017). The issue of informed consent within the context of app-based research becomes one of scalability and customization, of an approach that, like the design of the app itself, needs to be catered for the individual participant/user (Doerr et al. 2017). The nature of privacy itself is similarly fluid, with our understanding of the concept of privacy changing over time and the nature of these changes often driven by the technology that is potentially invading it (Ferdous et al. 2017). Our understanding of these concepts then, and how they are applied in an app-based research setting, needs careful consideration and constant development as this is an area that is neither static nor definitive (Robbins 2017).

As a society, we are increasingly presenting ourselves in an online space and interacting with a digital landscape that records these social and commercial transactions (Lupton 2016). The more we interact within these spaces, the greater our understanding of the importance of digital data security becomes. Mobile technologies, particularly smartphones, allow some sense of comfort in the average user as they have encryption and identity protection features incorporated into their design to enable them to be secure (Doerr et al. 2017). With this increasing understanding of data collection, however, there is trepidation among some users as to the risk associated with participating in app-based research and allowing access to their data, particularly as the very nature of electronic data collected can potentially be redistributed with ease (Moore et al. 2017). In some cases, privacy concerns have caused participants to leave the project they have signed up for before the study was completed (Rawassizadeh et al. 2015). The task as researchers is therefore to allay fears about potential data misuse, particularly by third parties (Lupton 2016), in ways that are ethical, clearly identified, and easily understood by research participants.

This has become even more pressing in the wake of the Facebook Cambridge Analytica privacy scandal. In early 2018 Facebook users became aware that British political consultancy firm Cambridge Analytica had harvested the personal data of millions of people's Facebook profiles without their consent. The information was used by political campaigners to influence public opinion. The app that caused the Cambridge Analytica scandal was a simple personality test that enabled the gathering of data from not only those who participated in the test but also some of those

participant's friend's data – people who had not consented to their information being collected. The extent to which data is deployed by third-party interests has been spotlighted in this and other controversies that have "shown how the same personal data has been weaponized to suppress minority voters, radicalize young white men, exploit political beliefs to sow division, and possibly swing elections" (Tiku 2018). The consequences of these events have led to legislative as well as commercial fallout where users increasingly demand transparent privacy policy to regulate their use of the web, apps, and other smart interfaces.

This scandal centers on the relationships between apps utilized everyday on smartphones and the privacy policies that govern, restrain, and engage those apps, their designers, and their users. The response from Facebook – the app that provided the terrain upon which the privacy violations were permissible – was pallid, espousing intentions to "step up" and improve their regulation of apps and potential third-party violations. Yet within 2 years, Facebook found themselves at the center of another privacy scandal when it became apparent they were paying users as young as 13, \$20 per month to track their phone usage (Cullinan 2019).

In May 25, 2018, the European Union's new legislation called General Data Protection Regulation came into effect. Under this law, users must be able to understand clearly the company's data collection policies including its type and extent. They also retain the right to access the data stored and determine how it might be used. This is a sharp change from how privacy was regulated with users having to understand detailed and complex privacy policy as well as enact intricate and burdensome opt-out practices across all platforms and apps. The new legislation is designed to streamline the process, enabling quick, clear, and concise understanding of how data is going to be stored and used. These changes mark positive steps toward empowering users of the web and smart devices to have control over how their information is gathered, archived, and activated. It also brings privacy concerns to the forefront of contemporary consciousness making it a critical space upon which to understand the relationships between users, consumers, business and marketing, government, and law enforcement. While privacy on the web and via smart devices cordon privacy concerns onto platforms and interfaces, people with disability live within a privacy bubble that forms a critical intersection between the self, technology, public, and private.

For people with disability, the interface with technology offers a number of fluctuating benefits and negatives to their daily experiences, depending on the type of disability. The ubiquity of smartphones has almost universally been welcomed by people with disability because they can offer assistance without marking difference. People with disability report that the type of assistive technologies they use can have an impact on their level of integration and social interaction depending on how these assistive tools are viewed by the wider populace. Smartphones are used by a large proportion of the population, and so a person with disability using it to assist them does not attract attention or mark the individual as "different." This can be tremendously empowering as the individual can protect their privacy, revealing or concealing their disability as they see fit, and retain power over how they are coded and read in social interactions.

Ethical Considerations in Research

Much of our contemporary ethics regulations and privacy governance in the public and private research sector come from medical and health sciences, stimulated by a series of highly visible and horrific use of human subjects in medical experiments and trials without their consent, from the Tuskegee experiments to the Nuremberg declarations emanating out of the appalling medical experimentation of the Nazis on a number of human subjects – twins, Jews, gypsies, the disabled, homosexuals, and others. These protocols have extended into humanities research whenever human subjects might be involved via interviews, focus groups, and other data gathering strategies that require the subject to offer up information, behavioral outputs, or insights. The need to secure informed consent, to ensure the anonymity and privacy of research data, storage, and usage, as well as enduring protection of subject identity, is structured to not only ensure the integrity of research output and results but to also ensure the individual participant can be protected from unwarranted invasions of privacy. Again, a prime example is found in medical science and in the case of Henrietta Lacks whose immortal cells were the foundation of most major medical breakthroughs of the late twentieth century, but her family never knew her cells were being used in this way and only discovered when researchers came to take blood samples from family members some 20 years after Henrietta's cells were harvested. The researchers were not effective in their communication with the Lacks family about the purpose of the samples they were taking from them and the family only discovered the full extent of Henrietta's scientific contribution, and what their own samples were being used for, via journalistic intervention (Skloot 2011). Such confusion is to be prevented at all costs, and participants should be fully aware of what they are getting into, according to some scholarship. However, there is an emerging trend – stimulated by the emerging “feeling” of research being widely hamstrung by many of these guidelines – that a loosening of consent expectations should be permitted “to eliminate informed consent for research other than for ‘interventional’ or clinical research” (Rothstein 2009). However, such attitudes belie the complexity of privacy and protection debates in the age of increasing digitized and app-based research where informed consent is tenuous, complex, and contradictory.

In Australia, the Australian National Statement on Ethical Conduct in Human Research, the guidelines for consent are mapped, though the term “informed consent” is not used but, instead, “the requirement for consent” which outlines the need for a series of conditions to be met. These state that “consent should be a voluntary choice, and should be based on sufficient information and adequate understanding of both the proposed research and the implications of participation in it” (National Health and Medical Research Council 2018, p.16). The Statement confirms that “what is needed to satisfy these conditions depends on the nature of the project” (National Health and Medical Research Council 2018), a situation that revealed itself in the US example of Henrietta Lacks and her family. While harvesting Henrietta's cells was not illegal, when the researchers approached the family to take further

blood samples in the 1970s, they did not conduct due care in their engagement with the family. Rebecca Skloot has reported how this ethical breach has occurred due to a fundamental gap in researcher awareness in socioeconomic conditions, racial sensitivity, and participant understanding. Henrietta's husband only had the equivalent of a fourth grade US education, and so when researchers came asking about "cells," he had never heard of this biological term let alone understood how they might be used in research. The confusion within the family compounded a fundamental and gaping awareness of research, human participants, and consent:

All the stories mentioned that scientists had begun doing research on Henrietta's children, but the Lackses didn't seem to know what the research was for. They said they were being tested to see if they had the cancer that killed Henrietta, but according to the reporters, scientists were studying the Lacks family to learn more about Henrietta's cells. The stories quoted her son Lawrence, who wanted to know if the immortality of his mother's cells meant that he might live forever too. (Skloot 2011, p. 6)

Such confusion and gaps in awareness, understanding, practice, and consent filter through contemporary deployment of the Internet and digital devices in research involving human subjects. The Australian National Statement on Ethical Conduct in Human Research guidelines – updated in 2018 – do not mention any potential problems or implications for conducting research in a digital environment or using Internet-based applications. It is not the role of the Statement to offer specific guidance on the tools of research. What is made clear is that participants must have "sufficient information" to provide consent. However, in regard to online or Internet-based research, sufficient information is obscured. When researchers use established platforms like social media (Facebook, Twitter) or mobile apps, they are, to begin with, relying on the terms and conditions of that interface. It is, however, increasingly clear that users rarely read, much less understand the terms and conditions that they agree to when signing up for these platforms. For example, "the overwhelming majority of Facebook users lack the necessary interest in or skills to control their privacy settings in the way they want them" (van Dijck 2013, p. 2016). Complexity emerges when researchers seeking to use these platforms need to establish consent, and while they may not need to establish that the users fully understand the terms and conditions of the service but only their research, there remains difficulty in this gray area for an authentic and ethical consent to be sourced. As is stipulated in the National Statement on Ethical Conduct, "seeking their consent should not be merely a matter of satisfying a formal requirement" (National Health and Medical Research Council 2018, p. 16). Researchers need to be conscious of how a platform's terms and conditions might impact upon the level of consent offered and obtained for a research project. It is this obscurity and the ways in which discourse about digitization enter into the public realm that requires deeper examination.

It has been "estimated that if data subjects would actually read all the privacy policies presented to them, it would take them 244 hours annually" (Custers 2016, p. 2) to complete the task. This volume propels the increasing tendency for users of

social media and other digital platforms to routinely ignore “terms and conditions” and to “simply consent whenever confronted with a consent request” (Custers 2016, p. 3). The consequences of this behavior mean that “such consent no longer has any meaning” (Custers 2016, p. 3). The erosion of these concepts is situated within the ubiquity of digital devices and fast, cheap broadband allowing people to be online and connected all the time. Marketers, demographers, public relations personnel, and big business have made use of this permanent connective state by developing algorithms and tracking bots that can not only map but also predict the behavior of people online. The age of Big Data, combined with the sharing economy of social media where personal information is distributed, collaborated, and cohered, creates conditions where an online presence is enough to communicate swathes of information about who you are, your interests, and identity. Big Data has emerged as a way to define and categorize the excessive amounts of data “generated by information, communication and technological systems” (Zelenkauskaite and Bucy 2016) that we use everyday when we like Facebook posts, watch YouTube videos, browse the web, use an app, move through space, and send emails. This data is drawn from seven domains including “mobile communication; websites, social media/crowdsourcing; sensors; cameras/lasers; transaction process generated data; and administrative” (Kitchin and McArdle 2016). This data is generated as a result of activity in digital environments, and not only by the content we create on social media or by active uploads of video or written content. It is the information that supports and facilitates this activity as well. Some scholars characterize it along the axes of “volume, velocity, and variety” (Madden 2012, p. 4) to define the scale and abstract nature of the data collected. Once this data is analyzed, it can reveal a complex picture of the individual generating the data. Importantly, it appears that opting out of digitized interactions is not an option for protecting privacy – not only because the shape of our world makes analogue-only interactions increasingly difficult but also because the absence of data can speak as loudly as an abundance of data:

Withholding consent implies restricted access or no access at all to particular services, but it does not guarantee that your privacy is better protected. The use of Big Data increasingly enables predicting characteristics of people who withheld consent on the basis of the information available from people who did consent. (Custers 2016, p. 3)

Facebook harvests data from the address book of mobile phones when the owner consent to its mobile app doing so. This gathers that data of all that person’s contacts regardless of their consent or knowledge that this information is, often unwittingly, being shared with the organization. This information can then be used to create connections across the network to link more information to an individual and their social networks. Through mobile devices the ability of these large commercial organizations and governments to link an individual’s digital interactions with the physical space in which they occur then exacerbates these concerns. The innocuity with which we leave trails of voluntary and involuntary information generated by our Internet usage creates tensions within the debates circulating through privacy, security, and consent. In some circumstances, this is referred to as a “privacy

paradox” where users share an enormous amount of personal information while that information is utilized by different organizations for a variety of sometimes authoritarian or surveillance purposes undercutting our freedom of consent in fundamental ways. This duality spotlights the fluid nature of consent in online environments:

teenagers reveal their intimate thoughts and behaviors online and, on the other hand, government agencies and marketers are collecting personal data about us. For instance, the government uses driver license databases to find “dead-beat dads” or fathers who are behind on their child support payments. Many government records have been turned into digital archives that can be searched through the Internet. Every time we use a shopping card, a retail store collects data about our consumer spending habits. Credit card companies can create even larger profiles of our shopping behaviors. Locked away on hundreds of servers is every minute detail of our daily lives from our individual buying preferences to personal thoughts (Barnes 2006, para. 9).

It is not a problem of the “youth” but of the ways in which digital devices and platforms intersect with capitalism, civic responsibilities, civil liberties, privacy, and security protocols. In these circumstances consent becomes infinitely complex, and the principle that people should be able to determine what information is used about them in what way becomes dislodged and dangerous. In the terms and conditions of online sites, consent may encompass a whole range of intersections including “consent to customize content, customize advertising, contact customers by email, share behavioural data internally, share personal data internally and sell personal data to other parties” (Custers 2016, p. 2) either glossed over or unread by users. “Very rarely is the renewal of consent asked for” (Custers 2016, p. 2) in these circumstances, and even if it was, research shows that users are unlikely to pay close attention to the language through which they judge, evaluate, and decide on levels of privacy and terms of consent.

This ambivalence sets aside the wider social outrage of the violations of privacy by governments and corporations as belied not only by the Cambridge Analytica scandal but by the revelations of Edward Snowden of widespread spying by the US government on its citizens through the NSA program, PRISM. In the age of terrorism, the pervasive perception of the success of technology in identifying, fighting, and capturing criminals (see Munk 2017) has created tension between the benefits of a technology-rich environment and deepening concerns about privacy in an era of thinning privacy protocols and expectations. This unease becomes acute when considering people with disability for whom technology and digital interfaces have become an essential and liberating part of the everyday. The ways in which these individuals form a node of and for a radical and reflexive engagement with privacy and consent, technology and society, and anonymity and visibility offer evocative terrain for consideration.

People with disability monitor the boundaries between technology, consent, and privacy. Many of the privacy concerns currently being navigated by users of social media have been consciously engaged by people with disabilities who utilize assistive technologies, participate in cutting edge medical treatments or deal regularly with the medical industry, and who manage day-to-day intrusions upon their

selfhood from inquiring gazes and invasive questions about their daily lives. According to Braithwaite (1991):

Subjects reported that ablebodied persons regularly request disclosure on such topics as the extent of the disability, sexuality, costs of assistive devices (such as how much a power wheelchair costs), or how their disability occurred. (p. 225)

The added complexity of social media and digital applications being deployed as monitoring and research tools spotlights how privacy is configured for different groups within the social framework. These tensions demonstrate the ways in which privacy is contextually determined and where “boundary turbulence . . . occurs when unintended persons become co-owners of private information” (Hays and Butauski 2018, p. 379) as is often the case with the ubiquity of digital technologies. These “fuzzy boundaries” are “where the rules surrounding information sharing are ambiguous” (Hays and Butauski 2018, p. 379) and people with disabilities are often burdened with the responsibility to reduce this tension when dealing with non-disabled persons in order to contain and minimize stigma (McLaughlin et al. 2004). The border policing protocols often fall to the person with disability who must navigate these tensions in daily life. The flexibility of these negotiations demonstrates the ways in which privacy is a constant dialogue between multiple and competing factors. Some researchers have asserted that “protecting ourselves from possible privacy intrusion is unrealistic”(Chalghoumi et al. 2019, p. 10) and that “a strict privacy protection strategy might not be best as one may doubt it will eventually pay off” (Chalghoumi et al. 2019, p. 10). Yet privacy remains at the forefront of how subjectivity is understood and configured. For people with disability who have had their rights stripped on the basis of medicalized models of disability that suggest subhuman status, privacy is “related to expectations of respect for their right to self-determination” (Hoeyer 2010, p. 270). At a fundamental level, privacy “presumes an intrinsic, pre-existing self, protecting a sphere of autonomy in which the individual is free to express and inhabit that self” (Phillips 2004, p. 693). For people with disabilities, the right to express themselves in autonomy and to articulate control over how information about them is collected and shared is a crucial node for struggle – one which they deploy every day. Studies have shown that people with disabilities are “willing to give up some privacy by sharing the data with their doctor, but only if the data generated by the monitoring was seen as truly useful in helping to provide care” (Beach et al. 2009, p. 1). The role of technology in passively surveilling their lives is less welcome as it is attached to unwarranted invasions and further penetration of privacy barriers that they are already managing on a daily basis. Moore et al. (2017) distinguish between active and passive forms of participant activity as having an impact upon acceptance of privacy penetration:

Active tasks require deliberate action on the part of the participant, for example, by responding to surveys or doing a sensor-based task like a tapping test. Passive tasks are those in which the participant donates data without conscious effort, such as through the tracking and transmitting of GPS data. (Moore et al. 2017, p. 4)

These roles also obscure how the data is managed, protected, and encrypted further blurring the lines between the privacy policies of the platform and its software versus the privacy policies of the researchers and whether these are compatible. For example, “some apps appear to encrypt participant data on the participant phone and maintain this encryption during transmission, while others appear only to encrypt the data when it arrived to the backend server” (Moore et al. 2017, p. 4). As such, if the user has limited understanding of these processes, their ability to offer informed consent is significantly compromised. The complexity of “scalable” forms of consent makes managing online forms of data collection and research more difficult than offline experiences. It also means that one cannot merely apply “ethics codes designed for the offline world to an online world” (Nunan and Yeniciglu 2013, p. 801). The privacy policies of the established platforms that researchers most likely are hoping to leverage due to their ubiquity and everydayness may not have robust protections:

Within its AppStore/iOS policies, Apple states that any app collecting any user or usage data, including personal health information must have a PP [privacy policy], however they provide no guidelines on what elements are required within that PP. (Moore et al. 2017, p. 7)

Conclusion

Typically, people with disability are marginalized for their use of assistive technologies, prostheses, and other forms of support. The rise of smartphones is therefore particularly significant because the disabled population use mobile media in the same way as the nondisabled population (McNaughton and Light 2013) potentially reducing unwanted questioning from the general population. With the rise of new forms of social and locative media prompting calls for smarter cities, how we understand and experience disability, access, and social interaction generally is undergoing dramatic shifts.

For many people, and even more so for people with disability, the smartphone is a very personal device. A smartphone can be seen as an extension of the disabled body in a way that is perhaps even more personal than seen in the general population. For people with disability, smartphones are not only a socially empowering device, but they have also become a critical tool for the navigation of urban space. Further, a smartphone is usually with the owner at all times, so there is a perceived comfort in having a large degree of control over the availability of personal information to others, similar to carrying a wallet or handbag. In addition, smartphones contain accessibility features and apps that can effectively support people with disability in their interaction with the world (Apple 2019; Google 2019).

However, this acceptance of the technology does not come without pitfalls, as was seen with the resistance to the Urban Spaces app by the research participants in this project. Indeed, this was a critical, albeit unexpected, finding of the pilot stage of

the project. As the app required large amounts of data to be sent invisibly to a third party, this raised privacy concerns among the participants. As a general rule, collecting data using mobile devices, apps, and online services is fraught with complexity. For the subjects in this study, the engagement of an app on their devices that would passively record information created a crisis in confidence punctuated by the themes of privacy, autonomy, and surveillance. Their situation within a “privacy paradox” was punctuated by wider debates about the role of corporations in collecting Big Data for marketing purposes along with unsanctioned sale to third-party interests beyond the scope of the initial expectations of use. As such, out of a total of nine participants across two regions, data was only able to be gathered from one participant.

The opacity of terms of use and insecurity around the management and security of data undoubtedly plays a role in creating anxiety about the recording of data for research purposes. Furthermore, the constant and consistent place of privacy management in the lives of people with disability means that informed consent is a site which requires radical rethinking. This cohort in particular may need to more fully understand the role and function of their participation in such research, particularly when ubiquitous digital devices are going to be utilized specifically for their ability to gather a whole range of data about a person and their activities in both active and passive ways.

References

- Abbott C, Brown D, Evett L et al (2013) Emerging issues and current trends in assistive technology use 2007–2010: practising, assisting and enabling learning for all. *Disabil Rehabil Assist Technol* 9(6):453–462
- Apple (2019) iOS accessibility. Retrieved from <http://www.apple.com/au/accessibility/iphone/>
- Barnes SB (2006) A privacy paradox: social networking in the United States. *First Monday* 11(9). <http://firstmonday.org/ojs/index.php/fm/article/view/1394/1312>
- Beach S, Schulz R, Downs J et al (2009) Disability, age, and informational privacy attitudes in quality of life technology applications: results from a national web survey. *ACM Trans Access Comput* 2(1):1–21. <https://doi.org/10.1145/1525840.1525846>
- Boellstorff T (2008) Coming of age in second life: an anthropologist explores the virtually human. Princeton University Press, Princeton
- Braithwaite DO (1991) Just how much did that wheelchair cost? Management of privacy boundaries by persons with disabilities. *West J Communic* 55(3):254–274. <https://doi.org/10.1080/10570319109374384>
- Casas I (2007) Social exclusion and the disabled: an accessibility approach. *Prof Geogr* 59 (4):463–477
- Chalghoumi H, Cobigo V, Dignard C et al (2019) Information privacy for technology users with intellectual and developmental disabilities: why does it matter? *Ethics Behav* 29(3):201–217. <https://doi.org/10.1080/10508422.2017.139334>
- Chib A, Jiang Q (2014) Investigating modern-day *talaria*: mobile phones and the mobility-impaired in Singapore. *J Comput-Mediat Commun* 19(3):695–711

- Cullinan D (2019) Facebook is paying teenagers for permission to spy on them. <https://blog.usejournal.com/facebook-is-paying-teenagers-for-permission-to-spy-on-them-c5af3a9daaf4>. Accessed 18 Mar 2019
- Custers V (2016) Click here to consent forever: expiry dates for informed consent. *Big Data Soc* 3:2–3. <https://doi.org/10.1177/2053951715624935>
- Davidson J (2008) Autistic culture online: virtual communication and cultural expression on the spectrum. *Soc & Cult Geog* 9(7):791–806
- Dobransky K, Hargittai E (2006) The disability divide in internet access and use. *Inform, Communic & Soc* 9(3):313–334
- Doerr M, Maguire Truong A, Bot BM et al (2017) Formative evaluation of participant experience with mobile econsent in the app-mediated Parkinson mPower study: a mixed methods study. *JMIR Mhealth Uhealth* 5(2):e14
- Doughty K (2011) SPAs (smart phone applications) – a new form of assistive technology. *J Assist Technol* 5(2):88–94
- Douglas KH, Wojcik BW, Thompson JR (2012) Is there an app for that? *J Spec Ed Technol* 27:59–70
- Ellis K, Kent M (2008) iTunes is pretty (useless) when you're blind: digital design is triggering disability when it could be a solution. *M/C J* 11(3 ‘Able’)
- Ellis K, Kent M (2011) Disability and new media. Routledge, New York
- Ellis K, Goggin G, Kent M (2015) FCJ-188 disability's digital frictions: activism, technology, and politics. *Fibreculture J* 26:7–31
- Ellis K, Kent M, Locke S et al (2017) Using smartphones to navigate urban spaces: people with disabilities and the role of mobile technologies in Western Australia. Curtin University, Bentley
- Ferdous MS, Chowdhury S, Jose JM (2017) Analysing privacy in visual lifelogging. *Pervasive Mob Comput* 40(40 Supplement C):430–449
- Ginsburg F (2012) Disability in the digital age. In: Miller D, Horst H (eds) *Digital anthropology*. Berg, London, pp 101–126
- Goggin G (2006) Cell phone culture: mobile technology in everyday life. In: Routledge. London, New York
- Goggin G (2011) Disability, mobiles, and social policy: new modes of communication and governance. In: Katz J (ed) *Mobile communication: dimensions of social policy*. Transaction Publishers, New Brunswick, pp 259–272
- Goggin G, Newell C (2003) Digital disability: the social construction of disability in new media. Rowman and Littlefield Publishers Inc, Lanham
- Goggin G, Noonan T (2006) Blogging disability: the interface between new cultural movements and internet technology. In: Burns A, Jacobs J (eds) *Use of blogs*. Peter Lang, New York, pp 161–172
- Google (2019) Google accessibility. Retrieved from <https://www.google.com.au/accessibility/>
- Hays A, Butauski M (2018) Privacy, disability, and family: exploring the privacy management behaviours of parents with a child with autism. *Western J Communic* 82(3):376–391. <https://doi.org/10.1080/10570314.2017.1398834>
- Hoeyer K (2010) The role of privacy and informed consent in Danish and Swedish biobank practices: exploring donor perspectives. *Medic Law Int* 10:269–285
- Jacquemard T, Novitzky P, O’Brien F et al (2014) Challenges and opportunities of lifelog technologies: a literature review and critical analysis. *Sci Eng Ethics* 20(2):379–409
- Kane S, Jayant WJ et al (2009) Freedom to roam: a study of mobile device adoption and accessibility for people with visual and motor disabilities. ASSETS, Pittsburgh
- Kitchin R, McArdle G (2016) What makes big data, big data? Exploring the ontological characteristics of 26 datasets. *Big Data Soc*:1–10. <https://doi.org/10.1177/205395171663113>
- Kouroupetroglo G, Pino A, Riga P (2017) A methodological approach for designing and developing web-based inventories of mobile assistive technology applications. *Multimed Tools Appl* 76(4):5347–5366

- Lupton D (2016) The diverse domains of quantified selves: self-tracking modes and dataveillance. *Econ Soc* 45(1):101–122
- Lupton D, Seymour W (2000) Technology, selfhood and physical disability. *Soc Sci & Med* 50 (12):1851–1862
- Madden S (2012) From databases to big data. *IEEE Internet Comput.*, <https://www.computer.org/csdl/mags/ic/2012/03/mic2012030004.pdf> 16:4
- Matthews HLB, Picton P et al (2003) Modelling access with GIS in urban systems (MAGUS): capturing the experience of wheelchair users. *Area* 35(1):34–45
- McLaughlin ME, Bell MP, Stringer DY (2004) Stigma and acceptance of persons with disabilities: understudied aspects of workforce diversity. *Group Organiz Manage* 29(3):302–333. <https://doi.org/10.1177/1059601103257410>
- McNaughton D, Light J (2013) The iPad and mobile technology revolution: benefits and challenges for individuals who require augmentative and alternative communication. *Augment Altern Commun* 29(2):107–116
- McRae L, Ellis K, Kent M (2018) Internet of things (IoT): education and technology. The relationship between education and technology for students with disabilities. <https://www.ncsehe.edu.au/publications/internet-of-things-iot-education-and-technology-the-relationship-between-education-and-technology-for-students-with-disabilities/>
- Montreal In/Accessible (2014) Montreal in/accessible: Megafone. <http://mia.mobilities.ca/megafone/>. Accessed 8 Mar 2017
- Moore S, Tassé A-M, Thorogood A, Winship I et al (2017) Consent processes for mobile app mediated research: systematic review. *JMIR Mhealth Uhealth* 5(8):e126. <https://doi.org/10.2196/mhealth.7014>
- Munk T (2017) 1000,000 false positives for every real terrorist: why anti-terror algorithms don't work. *First Monday* 22(9). <http://firstmonday.org/ojs/index.php/fm/article/view/7126/6522>
- Naftali M, Findlater L (2014) Accessibility in context: understanding the truly mobile experience of smartphone users with motor impairments. In: ASSETS14 – proceedings of the 16th international ACM SIGACCESS conference on computers and accessibility, pp 209–216. <https://doi.org/10.1145/2661334.2661372>
- National Health and Medical Research Council (2018) Australia Research Council, National Statement on Ethical Conduct in Human Research. https://www.nhmrc.gov.au/_files_nhmrc/file/publications/national-statement-2018.pdf
- Nunan D, Yenicioglu B (2013) Informed, uninformed and participative consent in social media research. *Int J Market Res* 55(i. 6):791–808. <https://doi.org/10.2501/IJMR-2013-067>
- Phillips DJ (2004) Privacy policy and PETs. *New Media Soc* 6(6):691–706. <https://doi.org/10.1177/146144804042523>
- Rawassizadeh R, Momeni E, Dobbins C et al (2015) Lesson learned from collecting quantified self information via mobile and wearable devices. *J Sensor Actuator Netw* 4(4):315
- Robbins ML (2017) Practical suggestions for legal and ethical concerns with social environment sampling methods. *Soc Psychol Personal Sci* 8(5):573–580
- Rothstein MA (2009) Currents in contemporary ethics: improve privacy in research by eliminating informed consent? IOM report misses the mark. *J Law Med Ethics* 37:507–512
- Schmöcker J-D, Quddus M, Noland R et al (2005) Estimating trip generation of elderly and disabled people: analysis of London data. *Transportation Res Rec J Transportat Res Board* 1924:9–18
- Skloot R (2011) The immortal life of Henrietta Lacks. Broadway Books, New York
- Söderström S (2009) Offline social ties and online use of computers: a study of disabled youth and their use of ICT advances. *New Media Soc* 11:709–727. <https://doi.org/10.1177/146144809105347>
- Stephenson J, Limbrick L (2015) A review of the use of touch-screen mobile devices by people with developmental disabilities. *J Autism Develop Disorders* 45(12):3777–3791

- Taylor Z, Józefowicz I (2012) Intra-urban daily mobility of disabled people for recreational and leisure purposes. *J Transport Geog* 24:155–172
- Tiku N (2018) Europe's new privacy law will change the web, and more. *Wired*. <https://www.wired.com/story/europe-s-new-privacy-law-will-change-the-web-and-more/>
- Union of the Physically Impaired Against Segregation (1976) Mission statement. <https://disability-studies.leeds.ac.uk/wp-content/uploads/sites/40/library/UPIAS-UPIAS.pdf>
- van Dijck J (2013) You have one identity': performing the self on Facebook and LinkedIn. *Media. Culture Soc* 35(2):206
- Vicary F, Gomez M (2012) From inclusive accessibility to exclusionary complexity: the communications technologies trajectory. *Intellect Disabil Australas* 33(4):8–9
- Zelenkauskaitė A, Bucy EP (2016) A scholarly divide: social media, big data, and unattainable scholarship. *First Monday* 21(5). <http://firstmonday.org/ojs/index.php/fm/article/view/6358/5511>



From Technological Issue to Military-Diplomatic Affairs: Analysis of China's Official Cybersecurity Discourse (1994–2016)

24

Weishan Miao, Jian Xu, and Hongjun Zhu

Contents

Introduction	432
Method	433
Content Analysis	433
Critical Discourse Analysis	434
Findings	435
Content Analysis	435
Critical Discourse Analysis	437
Conclusion	441
References	441

Abstract

This chapter traces the trajectory of how the Chinese government frames cybersecurity by examining the evolution of official cybersecurity discourse over the past two decades. To understand this discursive evolution and the social power dynamics that have been shaping the change, the chapter presents content analysis and critical discourse analysis of the news coverage on cybersecurity from 1994 to 2016 in the *People's Daily* – one of the most authoritarian mouthpieces of the Chinese Communist Party. It argues that China's official cybersecurity discourse has evolved from a focus on “technological,” “socialpolitical” issues to the current “military-diplomatic” affairs focus. Correspondingly, official responses to cybersecurity threat have changed from initially treating it as a mere technology crime to upgrading it to the current military and diplomatic issue. The militarizing

W. Miao · H. Zhu

Chinese Academy of Social Sciences, Beijing, China

e-mail: miaoweishan@163.com; suzhoudajun@163.com

J. Xu (✉)

Deakin University, Melbourne, VIC, Australia

e-mail: j.xu@deakin.edu.au

and diplomatizing turn of China's cybersecurity discourse have mainly been caused by the increasing Sino-American conflicts and disputes over cybersecurity and Internet governance since 2010 as well as China's growing ambition to restructure global cyber power since 2014. This chapter contributes to understanding China's state-centric approach to Internet governance and the promotion of "cyber sovereignty" internationally in the pursuit of a new global Internet order.

Keywords

Cybersecurity · Internet · Governance · Discourse · China

Introduction

China officially gained access to the global Internet on 20 April 1994 (Xinhua 2014). Over the last 25 years, the fast development of China's Internet has not only profoundly transformed Chinese people's political expression, public engagement, and lifestyle (e.g., interpersonal communication, entertainment habits, consumption, and entrepreneurship), but it has also made China a global Internet superpower. By June 2018, China had 802 million Internet users and 5.44 million websites (CNNIC 2018). China is now the world's largest e-commerce market and has become a major global force in mobile payment and digital investment, leading the world's digital economy (Woetzel et al. 2017). Along with the prosperous development of China's digital technologies, industries, cultures, and economies, cybersecurity has become an increasingly important issue for the Chinese government, enterprises, Internet policy-makers, and researchers. In 2014, China set up the Central Leading Group for Cybersecurity and Informatization (renamed the Central Cyberspace Affairs Commission in 2018), led by President Xi Jinping, for the purpose of managing cybersecurity concerns and other Internet-related issues. On 1 June 2017, China's first Cyber Security Law came into effect to ensure cybersecurity and safeguard China's cyberspace sovereignty and national security. These governmental actions have demonstrated the government's increasing attention to cybersecurity.

Existing research on cybersecurity studies mainly focuses on technological or policy analysis (Eriksson and Giacomello 2014). Examination of the evolution and complexity of cybersecurity discourse in national and global contexts is largely under-researched. Constructivists believe discourse not only reflects social reality but also influences and constructs it (Galbin 2014). The concept of "securitization" is defined by the Copenhagen School of security studies as a speech act in which a certain issue is socially constructed as a threat (Stritzel 2014). The securitization process of a specific issue is in fact a discursive process by means of which an actor claims a referent object as threatened, demands the right to take countermeasures to manage the threat, and justifies the countermeasures to the audience (Van Munster 2012). Following this constructivist approach, more and more research on the discursive construction of cybersecurity and its impacts has come out in recent years in the field of Internet studies (Cavelti 2007; Eriksson and Giacomello 2007).

There has not been a systematic analysis on China's cybersecurity discourse, and this research aims to fill the gap by analyzing the evolution of China's official cybersecurity discourse. To understand the discursive evolution and the social power dynamics that has been shaping the change, this chapter critically analyzes news coverage of cybersecurity issues in the *People's Daily* (*PD*) from 1994 to 2016. *PD* was selected because it is one of the most authoritative mouthpieces of the Chinese Communist Party (CCP) and is often used by CCP to explain government policies and define government positions on important social, political, and economic issues. Therefore, *PD* is often used by researchers as a rich discourse database to analyze the government's framing of policies and politics (Wu 1994).

Method

This study uses both content analysis and critical discourse analysis to analyze *PD*'s framing of cybersecurity. Content analysis can reveal the changes in the news coverage of cybersecurity through the quantity and discursive themes that occurred over the last two decades. Moreover, it enables attribution analysis of the cybersecurity issue from the government's perspective and percentage analysis of the information sources of *PD*'s news coverage on the topic. The critical discourse analysis based on the findings of the content analysis will further provide an in-depth understanding about how and why *PD*'s news coverage on cybersecurity is constructed within China's changing social, technological, and political contexts. The two methods contribute to the comprehensive analysis of China's official media discourse on cybersecurity.

The researchers retrieved all articles about cybersecurity published by *PD* from 1 January 1994 to 31 December 2016 from *PD*'s online database (<http://data.people.com.cn/rmrb/20190214/1?code=2>). The database allows users to access all articles published by *PD* from 1946 to present. The researchers searched the database by combining "security" (安全) with a series of keywords, including "cyber" (网络), "information" (信息), "computer" (计算机), the "Internet" (互联网), and "cyber-space" (网络空间). A total of 1271 articles were found. Two researchers carefully read all the articles and excluded irrelevant articles according to two criteria. First, only news coverage and commentary pieces on cybersecurity were selected for further analysis. Book reviews, interviews, letters from readers, and policy summaries about cybersecurity were excluded. Second, at least one-third of the article content had to focus on cybersecurity. The two researchers discussed any uncertain articles to reach consensus on the final sample. A total of 281 articles were retained for the content and critical discourse analyses.

Content Analysis

Previous studies have identified three discursive themes on cybersecurity: technological, socialpolitical, and military-diplomatic (Cavelti 2015). The quantitative

content analysis sought to confirm whether *PD*'s cybersecurity discourse fell into the three discursive themes and determine the changes in the rate of representation of each theme over the past two decades.

The first code in the analysis concerns to who or what the cybersecurity threat is attributed in the article; this included three categories: "not mentioned," "technological reason," and "man-made reason." If "man-made reason" was identified, subcategories were further coded; these included "nation," "organization," "individual/hacker," and "unknown." The second code concerns possible solutions to a cybersecurity problem with seven categories: "not mentioned," "strengthening technologies," "individual precaution," "corporate responsibility," "government responsibility," "international cooperation," and "responsibility of the whole human society." The third code concerns the information sources of the news coverage and included six categories: "not mentioned," "government or government officials," "organizations or corporations," "experts or scholars," "media or journalists," "ordinary individuals," and "others." If more than one subcategory for each code was identified in an article, multiple subcategories were coded at the same time.

Two researchers participated in the coding process and conducted four rounds of test coding. In each round, they randomly selected 20 articles from the corpus and coded these articles independently. They then discussed the differences in their coding results until a mutual understanding was achieved. The overall inter-coder reliability is 0.92 with the highest for the third code (information sources at 0.96) and the lowest for the second code (possible solutions, 0.90). After testing the coding of 80 articles, the two coders completed final coding for the 201 remaining articles.

Critical Discourse Analysis

The content analysis is useful for providing a map of official media's discourse on cybersecurity in China, including themes, attributions, resolutions, and information sources. The critical discourse analysis further helps us understand the hidden ideology, social structure, and power relations embedded in official media discourses on cybersecurity. As Fairclough argues (2010), critical discourse analysis aims to explore the opaque relationships between discursive practices and social and cultural structures, relations, and processes to reveal the discursive sources of power, dominance, and hegemony. Following this approach, the chapter treats *PD*'s cybersecurity discourse as a form of social practice that interplays with China's social and political situations, institutions, and structures. By critically reading the text of the selected articles, the researchers aimed to find connections between the texts and China's social, technological, and political transformations over the past two decades to better understand the official media's framing of cybersecurity using different themes and strategies at different times.

Findings

Content Analysis

In the 22 years examined, 160 articles (57% of the total) framed cybersecurity as a socialpolitical issue, 79 articles (28%) frame the topic as a military-diplomatic issue, and 42 articles (15%) frame it as only a technological issue. To identify the changes in each framing agenda throughout the timeframe, we divided the examined timeframe (1994–2016) into three periods (1994–2000, 2001–2009, 2010–2016) according to the key achievements and turning events in China's Internet development. The rationality of the periodization will be explained in the critical discourse analysis section, which follows the same periodization.

Further analysis shows that the percentage of socialpolitical framing changed little across the three historical periods. The percentage of technological framing has been dramatically declining, whereas the percentage of military-diplomatic framing has been rising, moving to the mainstream agenda from an initially peripheral position (see Table 1). In the years 2010 and 2013, military-diplomatic framing topped the three agendas of cybersecurity, due to Google's withdrawal from mainland China and the Snowden incident, respectively.

In terms of the attributions of cybersecurity threat, 89 articles (31.67%) do not mention any explicit reason. Thirty-nine articles (13.88%) mention technological reasons, and 153 articles (54.45%) refer to cybersecurity risk caused by man-made reasons (see Table 2). Among human threats, 58% of articles refer to criminals and hackers, and 35% point to national governments. Organizations are the least mentioned as a responsible party, only accounting for 6%. One percent of articles indicate the reasons for a cybersecurity threat are unclear or unknown. For those articles that regard relevant national governments as a threat to China's cybersecurity, 93% claim the USA as the most threatening nation. Attribution to the USA dramatically increased in 2010 and reached its peak in 2013 due to the Google and Snowden incidents.

Table 1 Percentage of three framing agendas of cybersecurity across three historical periods (1994–2016)

	1994–2000 (n = 36)	2001–2009 (n = 59)	2010–2016 (n = 186)	Total (N = 281)	χ^2
Technological framing	31%(11)	25%(15)	9%(16)	15%(42)	17.883***
Socialpolitical framing	64%(23)	64%(38)	53%(99)	57%(160)	3.097
Military-diplomatic framing	6%(2)	10%(6)	38%(71)	28%(79)	27.776***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2 Attribution analysis in percentage for each framing agenda

	Technological framing	Socialpolitical framing	Military-diplomatic framing	Total	χ^2
Not mentioned	10(23.81%)	63(39.38%)	16(20.25%)	89(31.67%)	10.347**
Technological reasons	27(64.29%)	9(5.63%)	3(3.80%)	39(13.88%)	105.118***
Man-made reasons	5(11.90%)	88(55.00%)	60(75.95%)	153(54.45%)	45.379***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 Responsibility analysis by percentage for each framing agenda

	Technological framing	Socialpolitical framing	Military-diplomatic framing	Total	χ^2
Not mentioned	10(23.81%)	14(8.75%)	28(43.75%)	52(18.51%)	25.909***
Strengthening technologies	21(50.00%)	33(20.63%)	5(7.8%)	59(21.00%)	31.558***
Individual precaution	6(14.29%)	33(20.63%)	2(3.1%)	41(14.59%)	13.897**
Corporate responsibility	6(14.29%)	24(15.00%)	2(3.1%)	32(11.39%)	8.559*
Government responsibility	4(9.52%)	105(65.63%)	20(31.3%)	129(45.91%)	60.928***
International cooperation	4(9.52%)	16(10.00%)	34(53.1%)	54(19.22%)	40.174***
Responsibility of the whole human society	3(7.14%)	20(12.50%)	1(1.6%)	24(8.54%)	8.668*

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

In terms of possible solutions to cybersecurity threat, 18.51% of the articles offered no suggestion for resolution. For those with specific suggestions, 45.91% suggest the government should take the most responsibility for the solution; 21% suggest strengthening technologies. Enhancing international cooperation, individual precaution, and corporate responsibility accounted for 19.22%, 14.59%, and 11.39% respectively; 8.54% suggested the problem could only be solved with collaborative efforts by the whole of human society (see Table 3). Articles with technological framing usually proposed enhancing technologies as the solution to cybersecurity problems; government was largely seen as the main responsible party for cybersecurity resolution in socialpolitical framed articles. Enhancing international cooperation was suggested in articles with military-diplomatic framing.

In terms of information sources, the sources cited, from most to fewest, were government or government officials (54.8%), experts or scholars (35.59%), organizations or corporations (24.56%), media or journalists (15.66%), ordinary

Table 4 Information sources analysis in percentage for each framing agenda

	Technological framing	Socialpolitical framing	Military-diplomatic framing	Total	χ^2
Not mentioned	11(26.19%)	34(21.25%)	12(15.19%)	57(20.28%)	2.266
Government or government officials	18(42.86%)	82(51.25%)	54(68.35%)	154(54.80%)	9.092*
Organizations or corporations	9(21.43%)	47(29.38%)	13(16.46%)	69(24.56%)	5.025
Experts or scholars	17(40.48%)	50(31.25%)	33(41.77%)	100(35.59%)	3.069
Media or journalists	1(2.38%)	17(10.63%)	26(32.91%)	44(15.66%)	26.482***
Ordinary individual	1(2.39%)	28(17.50%)	3(3.80%)	32(11.39%)	13.81**
Others	1(2.40%)	16(10.00%)	1(1.27%)	18(6.41%)	8.064*

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

individuals (11.39%), and others (6.41%) (see Table 4). Further analysis of government or government official sources shows that most sources were from national or local police departments, probably because cybersecurity is mostly reported as a socialpolitical issue, and as law enforcement agencies, police departments at different levels are often interviewed. However, with the changing governance of the Internet in China in recent years, the Cyberspace Administration of China (CAC), which was founded in 2014 to formulate and implement policies on a variety of issues related to China's Internet, was increasingly cited as an authoritative source on cybersecurity. In addition, the Ministry of Industry and Information Technology, National Internet Emergency Centre, National Computer Virus Emergency Response Centre, China Information Technology Security Evaluation Centre, and other official organizations that widely release reports and data on cybersecurity issues were sometimes cited as information sources. Moreover, when cybersecurity issue was framed as a diplomatic issue involving international relations, a small number of articles cite data obtained from the Ministry of Foreign Affairs, Ministry of National Defense and Ministry of Commerce. President Xi Jinping's speeches on China's cybersecurity at various occasions were the most cited of sources from government official sources.

Critical Discourse Analysis

1994–2000

In the 1990s, China was still in the early stages of building cyber infrastructures. The period also witnessed the initial commercialization of the Chinese Internet. In the last 3 years of the period, Tencent, Alibaba, and Baidu were established, leading the first

wave of China's Internet industry. During this period, China's Internet population was small and faced limited cybersecurity risk domestically and internationally. The USA dominated the global Internet in technology, market, and population. Therefore, China's imaginaries of cybersecurity mainly came from the cybersecurity situation in the USA. In this period, *PD* published a series of articles reporting the cybersecurity status of the USA, including "U.S. develops 'intellectual spy' software for cybersecurity" (美开发网络安全“智能特工”软件), "Bill Clinton intends to call a cybersecurity meeting" (克林顿将召开网络安全会议), and "Top websites in the US were hacked" (美国顶级网站连遭袭击). These articles almost all follow the same framework: what happened in the West? How did the Western government respond to the cybersecurity risk? And we need to keep vigilant regarding such risk. In the late 1990s, with the wider application of the Internet in financial industries, much of the news reporting regarded the Internet as a new platform for crime. Cybersecurity threat was seen as a cybercrime. As reported in an article published on 9 October 2000, "Information security is not optimistic" (信息安全不容乐观):

E-commerce is developing at an unprecedented speed. As many application systems are unprotected, there exists a great risk of information security, especially in financial industry. In China, high-tech crime has been dramatically increasing. A few crimes had occurred in financial and banking industries. The amount of money involved ranged from hundreds of thousands of RMB to millions of RMB. (Wei 2000)

The reporting on cybersecurity in the 1994–2000 period demonstrates two main characteristics. First, the reporting emphasized the universality of the issue, indicating cybersecurity risk was increasingly common in nations where the Internet was emerging. The risk was often depicted as "unavoidable" and "naturally" bundled with the new technology. Second, the reporting warned people to be aware of cybersecurity risk and urged people to take appropriate measures if threatened. However, aside from a general call for this, no explicit measures were suggested. As an article titled "Information security, a new issue for humankind" (信息安全,必须面对的新课题), published in 1999 pointed out:

Cyber-crime is like a twin brother of the Internet. Since the first day when the Internet was invented, the problem has been accompanying and annoying us. . . . According to the statistics from the US, 47% of the Internet systems of the governmental institutions and tertiary educational institutions in the US were attacked at least once a year. . . . Even more troubling is the variety and imperceptibility of cyber-crimes. . . . This reminds every computer-user to urgently enhance precaution of information security. (Bai 1999)

2001–2010

Coming into the new millennium, China's Internet developed very rapidly. In 2008, China surpassed the USA for the first time in its number of Internet users (Barboza 2008). With the rise of blogging, audiovisual, and SNS services, China had entered the Web 2.0 era. During this time, there were a few cybersecurity incidents with national impact, such as the Panda Burning Incense virus in 2007. Cybersecurity

attacks became more prevalent than in the 1990s, and in 2005, the online systems of about 80% of enterprises and governmental organizations in China were attacked by viruses or hackers (Li 2006).

The 2008 Beijing Olympic Games posed an unprecedented challenge to the Chinese government to ensure the nation's cybersecurity for a successful Olympic Games. On the one hand, cybersecurity became an important government agenda. On the other, the government used the critical event as an opportunity to enhance public awareness of cybersecurity. As a *PD* article published in 2008 ahead of the Olympic Games argued "the cybersecurity for the Olympic Games involves a wide range of issues and has a large range of effects and therefore deserves the broadest public attention and participation. The Beijing Olympic Games is thus a great opportunity to promote the public awareness of cybersecurity" (Yu 2008).

In this period, cybersecurity was no longer a technological problem that stayed far in the West as it had been in the 1990s. Instead, it had become prevalent in the everyday life of Chinese people and urgently required effective solutions. This caused the shift of cybersecurity framing from the "technological" to "socialpolitical." As shown in the above content analysis, up to 65.63% news articles published in the period believed the government should take primary responsibility for cybersecurity and enact laws and regulations to enhance cybersecurity. News coverage during this decade took cybersecurity as a systematic problem that required a holistic solution. As one article suggested:

Cybersecurity requires a higher level of solution beyond technological protection and social management. It needs to be a holistic and integrated system, involving laws, code of ethics, management, technologies, talents and techniques. Successful governance should be built on the basis of secure technological platforms and integrate functions of multiple governing players under the central leadership. (Yang 2003)

2011–2016

China's cybersecurity discourse has demonstrated a military-diplomatic turn since 2010. From 2010 to 2013, military terms frequently appeared in *PD*'s cybersecurity coverage; terms such as "cyber military high point," "cyber defense," and "cyber cold war" were not identified in the first two periods examined. The 2010 exit of Google from China is widely seen as a trigger event of the militarization of China's cybersecurity discourse. In January 2010, Google announced that its email accounts of Chinese human rights activists had been hacked and said it was not willing to censor search results on its Chinese service (Branigan 2010). The incident was soon politicized by the US government as evidence of China's censorship of the Internet and information freedom (McGreal 2010).

For a brief period after the Google incident, *PD*'s cybersecurity reporting mainly criticized the US's politicization of the incident and its hegemony in global cyberspace and defended the legitimacy of the defensive actions of the Chinese government to protect cybersecurity. The reporting usually adopted a framework of "deny the American accusation and press charges against the US." A *PD* commentary titled

“Why American media like Google incident: Malformed thinking set matters” (美国媒体缘何钟情“谷歌事件” 畸形思维定势作祟) argues that:

One of the biases caused by the malformed thinking set is the double standards. Freedom has relativity, including Internet freedom. Does the US have absolute Internet freedom? No! The Children Online Protection Act stipulates a porn-filtering tool has to be installed for public online resources. The Patriotic Act stipulates relative authorities have the right to search citizens' call records and email accounts. (Wen 2010)

In another commentary named “Disputes on hacker wars” (黑客“大战”是非多), the author denies the Western accusation that China is an evil backstage manipulator and denounces the accusation as irresponsible and without evidence (Chen 2011). Moreover, the commentary accuses the USA of being the world's largest hacking nation and of publicly soliciting hackers to work for the government.

The Snowden incident of 2013, which revealed that the US National Security Agency hacked China's networks (BBC 2014) was another trigger event that intensified the militarization of China's cybersecurity discourse. Reports that denounced the American hegemony in global cyberspace and surveillance dramatically increased after the incident, framing the USA as the world's largest cybersecurity threat. At the same time, these reports emphasized the urgent necessity of strengthening China's cybersecurity capacity to cope with the global risk. The reports in this period usually positioned China at risk of cybersecurity threat from the USA and denied the “China threat theory” in regard to cyberspace.

Since 2014, China has run an annual World Internet Conference in Wuzhen, Zhejiang Province, to promote the Chinese vision of cyberspace governance internationally. At the 2015 conference, President Xi Jinping proposed the idea of “cyber sovereignty,” which means “respecting each country's right to choose its own Internet development path, its own Internet management model [and] its own public policies on the Internet” (Segal 2017). Moreover, he stressed a “multilateral” approach to Internet governance that emphasizes nation-states as principal decision-makers, directly challenging the “multi-stakeholder” approach favored by Western democracies, which brings together governments, the private sector, civil society, and international organizations in policy-making and governing processes (Strickling and Hill 2017). China's homegrown notion and approach to Internet governance are the principles for China's cyber engagement with international societies under Xi's leadership.

Domestically, cybersecurity has been unprecedentedly elevated to the level of national security. As President Xi stressed at a national work conference on cybersecurity and informatization in February 2014, “there is no national security without cybersecurity...move forward the construction of a cyber power through indigenous innovation” (People.com.cn 2018). On 27 December 2016, CAC released the first national cybersecurity strategy to guide China's cybersecurity work. The strategy aims to “build China into a cyber power while promoting an orderly, secure and open cyberspace and safeguarding national sovereignty” (United States Information Technology Office 2016). The military and defensive framing of cybersecurity during

2010–2013 has given way to a diplomatic and security-building framing since 2014. The military-diplomatic turn of cybersecurity discourse in *PD* and many other state media during this phase upgraded the importance of cybersecurity, making it one of the foremost agendas in China's national security and national strategy.

Conclusion

This chapter analyzes *PD*'s reporting on cybersecurity from 1994 to 2016 to track the trajectory of cyberspace discourse in China's leading state media. Though the content analysis shows that the "socialpolitical" framing (57%) outweighs "military-diplomatic" framing (28%) in the chosen timeframe, it is fair to assume that the "military-diplomatic" framing will become the dominant framework due to China's deepening contestation and collaboration in cyber affairs with Western nations. A few key events that occurred after 2016 have already demonstrated the discursive trend. On 1 June 2017, China's Cyber Security Law took effect, legally setting the cybersecurity agenda at the national level and giving it absolute importance (Yang and Xu 2018). At the 2016–2018 World Internet Conference, President Xi successively called for building a "cyber community of shared destiny," featuring mutual respect and trust, co-governance, sharing and collaboration, and seeking China's leadership in the new global Internet order (Li 2016). As a response, US-centered Western countries have aligned to curb China's global expansion of cyber power and digital infrastructure, resulting in the ban of Huawei from establishing 5G networks in the USA and Australia (Cilluffo and Cardash 2019). The interweaving of further contestation and cooperation between China and the West will remain essential characteristics of China's global cyber engagement. This reality will decide the dominance of the military-diplomatic framing in China's official cybersecurity discourse over the next decade or so. Ongoing analysis of China's cybersecurity discourse will help in the understanding of the changes and continuities of China's global cyber strategy, national security strategy, public diplomacy, and international relations in the digital era.

Acknowledgments We appreciate the editor of Journal of Xi'an Jiaotong University (Social Sciences) to allow us to reproduce material from a published Chinese article in the journal for this chapter (See: Miao and Zhu 2019).

References

- Bai T (1999) 信息安全,必须面对的新课题 (Information security, a new issue we have to deal with) 人民日报 (People's Daily). 9 Aug, p 12
- Barboza D (2008) China surpasses U.S. in number of Internet users. The New York Times. <https://www.nytimes.com/2008/07/26/business/worldbusiness/26internet.html>. Accessed 18 Feb 2019
- BBC (2014) Edward Snowden: leaks that exposed US spy programme. <https://www.bbc.com/news/world-us-canada-23123964>. Accessed 15 Feb 2019

- Branigan T (2010) Google to end censorship in China over cyber attacks. *The Guardian*. <https://www.theguardian.com/technology/2010/jan/12/google-china-ends-censorship>. Accessed 27 Feb 2019
- Cavelti MD (2007) Cyber-terror: looming threat or phantom menace? The framing of the US cyber-threat debate. *J Inform Tech Polit* 4(1):19–36
- Cavelti MD (2015) Cyber security. In: Collins A (ed) *Contemporary security studies*, 4th edn. Oxford University Press, New York, pp 400–416
- Chen Y (2011) 黑客“大战”是非多 (Disputes on hacker wars) *人民日报* (People's Daily). 5 Aug, p 21
- Cilluffo F, Cardash S (2019) What's wrong with Huawei, and why are countries banning the Chinese telecommunications firm? *The Conversation*. <https://theconversation.com/whats-wrong-with-huawei-and-why-are-countries-banning-the-chinese-telecommunications-firm-109036>. Accessed 28 Feb 2019
- CNNIC (2018) 第42次中国互联网络发展状况统计报告 (The 42nd Statistical Report on Internet Development in China). <http://www.cnnic.net.cn/hlwfzyj/hlxzbg/hlwtjbg/201808/P0201802063089299840.pdf>. Accessed 10 Feb 2019
- Eriksson J, Giacomello G (eds) (2007) International relations and security in the digital age. Routledge, New York
- Eriksson J, Giacomello G (2014) International relations, cybersecurity, and content analysis: a constructivist approach. In: Mayer M, Carpes M, Knoblich R (eds) *The global politics of science and technology – vol 2: perspectives, cases and methods*. Springer, Berlin/Heidelberg, pp 205–219
- Fairclough N (2010) Critical discourse analysis: the critical study of language, 2nd edn. Routledge, New York
- Galbin A (2014) An introduction to social constructionism. *Soc Res Rep* 26:82–92
- Li H (2006) 八成企业网络遭受病毒和黑客攻击 (Internet systems of 80% enterprises were attacked by viruses or hackers). *人民日报* (People's Daily). 15 June, p 14
- Li Z (2016) Why is a cyber community of shared destiny important. *China & US Focus*. <https://www.chinausfocus.com/peace-security/why-is-a-cyber-community-of-shared-destiny-important>. Accessed 28 Feb 2019
- McGreal C (2010) Hillary Clinton criticise Beijing over internet censorship. *The Guardian*. <https://www.theguardian.com/technology/2010/jan/12/google-china-ends-censorship>. Accessed 27 Feb 2019
- Miao W, Zhu H (2019) 中国网络安全语分析: 以《人民日报》1994–2016 年的报道为例 (Framing Cyber Security in China: An Analysis of People's Daily (1994–2016)) *西安交通大学学报* (社会科学版) (Journal of Xi'an JiaoTong University (Social Sciences)). 39(3):99–105
- People.com.cn (2018) 习近平谈网络安全:没有网络安全就没有国家安全 (Xi Jinping talks about cybersecurity: there is no national security without cybersecurity). <http://cpc.people.com.cn/xuexi/n1/2018/0817/c385476-30234135.html>. Accessed 27 Feb 2019
- Segal A (2017) Chinese cyber diplomacy in a new era of uncertainty. *Aegis Paper Series No. 1703*. <https://www.hoover.org/research/chinese-cyber-diplomacy-new-era-uncertainty>. Accessed 27 Feb 2019
- Strickling L, Hill J (2017) Multi-stakeholder internet governance: successes and opportunities. *J Cyber Policy* 2(3):296–317
- Stritzel H (2014) Security in translation: securitization theory and the localization of threat. Palgrave Macmillan, London
- United States Information Technology Office (2016) China publishes first National Cybersecurity Strategy. <http://www.usito.org/news/china-publishes-first-national-cybersecurity-strategy>. Accessed 27 Feb 2019
- Van Munster R (2012) *Securitization*. Oxford bibliographies. Oxford University Press, Oxford. <https://doi.org/10.1093/OBO/9780199743292-0091>
- Wei Y (2000) 信息安全形势不容乐观 (Information security is not optimistic) *人民日报* (People's Daily). 9 Oct, p 23

- Wen X (2010) 美国媒体缘何钟情“谷歌事件” 畸形思维定势作祟 (Why American media like Google incident: malformed thinking set matters) 人民日报 (People's Daily). 26 Jan, p 11
- Woetzel J, Seong J, Wang KW et al (2017) China's digital economy: a leading global force. McKinsey Global Institute. <https://www.mckinsey.com/featured-insights/china/chinas-digital-economy-a-leading-global-force>. Accessed 15 Feb 2019
- Wu G (1994) Command communication: the politics of editorial formulation in the People's daily. China Q 137:194–211
- Xinhua (2014) 20 years of the Internet in China. China.org.cn. http://www.china.org.cn/business/2014-04/20/content_32150035.htm. Accessed 10 Feb 2019
- Yang J (2003) “疫苗”还不够 – “冲击波”病毒攻防战的启示 (Vaccine is not enough: enlightenment from the battle against Blaster Worm) 人民日报 (People's Daily). 28 Sept, p 6
- Yang F, Xu J (2018) Privacy concerns in China's Smart City campaign: the deficit of China's cybersecurity law. Asia & the Pacific Policy Studies 5(3):533–543
- Yu J (2008) 如何防范木马入侵 (How to prevent Trojans virus infection?) 人民日报 (People's Daily). 3 July, p 14



Online Field Theory

25

Mathieu O'Neil and Robert Ackland

Contents

Introduction	446
Fields	448
Definition	448
Critiques	449
Networks	451
Actor-Network Theory	451
Social Network Analysis	452
A Theory of Online Fields	453
Agency	453
Boundaries	455
Field Structure	456
Applied Research into Online Fields: Web 1.0	456
Agency	457
Boundary: Environmental Risk	459
Analysis	459
A Web 2.0 Activist Network, but Not a Field	460
Agency	460
Boundary	461
Analysis	461
A Web 2.0 News Field as a Filter Bubble	462
Agency	462
Boundary	463
Analysis	463
Conclusion	464
References	464

M. O'Neil (✉)

News and Media Research Centre, University of Canberra, Canberra, ACT, Australia
e-mail: mathieu.oneil@canberra.edu.au

R. Ackland

School of Sociology, Australian National University, Canberra, ACT, Australia
e-mail: robert.ackland@anu.edu.au

Abstract

Though massive amounts of digital trace data can be collected about *how* people and information connect online, the question of *why* they do so has been given less attention. This chapter addresses the spread of innovations and controversies by asking why some actors choose to connect to new issues while others do not? To answer this question, a new framework combining field theory with social network analysis (SNA) – *online field theory* – is proposed. Field theory suggests that actors in social spaces are unequal and strive to change this inequality, and SNA provides a framework for testing hypotheses emerging from field theory. The framework also draws some elements from actor-network theory (ANT), such as the incorporation of nonhuman actors, but – unlike ANT – empirically examining actor choices mandates the establishment of distinctions between the agency of different categories of actors. These different types of agency interact in mutually constitutive ways with field boundaries: while field structure is readily apparent in Web 1.0 organizational fields – such as the online environmental movement – the lack of information about actor identities in some Web 2.0 settings complicates field analysis. The chapter also examines how online field theory can provide insight into how Web 2.0 algorithmic governance, customization, and personalization are contributing to the emergence of online echo chambers. We define “filter bubbles” as online fields characterized by low contention and high homophily and outline how research into actor connection to innovation should approach them.

Keywords

Field theory · social movements · innovation · social network analysis · environmental communication

Introduction

For the longest while, social science lacked data about the phenomena under its purview. With the development of electronic media, it is being literally submerged by an avalanche of digital traces: it is now possible to observe in real-time aspects of collective life (socialities, interests, tastes, and opinions), as well as to measure large-scale social processes which were until recently impossible to quantify. When it comes to deciding what is the best heuristic for analyzing these digital traces, network approaches are often seen as an excellent fit. Indeed when online social relations began to be studied in earnest, Jackson (1997) argued that the idea of using “a methodology based on the metaphor of a network to examine a communication medium based on the metaphor of a web” would appear to be “so obvious that it threatens to be trivial.” There has been much research examining online sociality from a network perspective, whether social network analysis (Gruzd et al. 2011; Haythornthwaite 2007; Park and Thelwall 2008; Wellman et al. 2003), network science (Myers and Leskovec 2012; Onnela and Reed-Tsochas 2010), or actor-network theory (Marres and Moats 2015; Rogers et al. 2015). Both the

implementation of network methods and the insights gained have been far from trivial, and network approaches are now a mainstay setting for quantitative Internet research.

This chapter proposes online field theory as a new framework for studying how online actors engage with issues. The framework combines field theory with social network analysis, and we argue that this approach is more suitable for examining this type of online behavior compared with approaches deriving from Science and Technology Studies (STS) such as actor-network theory.

Social network analysis (SNA) and actor-network theory (ANT) have vastly different epistemological foundations: SNA presupposes the existence of the elements or building blocks of networks – nodes and ties – while ANT regards nodes and ties as uniquely contingent. ANT also takes issue with the idea of micro-interactions leading to the emergence of macro-social structures such as fields. ANT is not alone in its objection to analysis involving hypotheses derived from theory, especially when the hypotheses relate to the behavior of actors online, resulting in large-scale digital trace data: a similar argument has emerged from an entirely different disciplinary field, namely, computer science. It was popularized in a famous *Wired* article on “the end of theory”; given massive amounts of digital trace data can be collected about *how* people and information connect online, the question of *why* they do so becomes irrelevant: “Who knows why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity. With enough data, the numbers speak for themselves” (Anderson 2008).

Do they really speak for themselves? Only if we believe that it is enough to predict behavior rather than understand evaluations, motivations, justifications, and hence causes. In contrast a field-theoretic perspective posits that human actors, unlike objects and signs, are reflexive: human actors create mental categorizations about the relative value of other humans, objects, and signs, and these categorizations may guide their actions. This perspective runs the risk of being seen as merely projecting ready-made categories onto hapless data. To safeguard against this charge, one must stay as close to the data as possible. The payoff to thinking in terms of fields and networks, rather than just networks, is significant: we demonstrate that the analytical properties of boundaries and agency can be clarified, and insights into social change and innovation gained. The “radical empiricism” (Marres and Moats 2015) of STS/ANT does not explain the failure of an actor to engage with an issue; nor does it account for the differences in actor experiences afforded by online governance institutions such as algorithms. This chapter uses the example of how ideas, causes, and risks emerge and circulate online to unpack the interplay of cultural and structural dynamics among online actors.

The online field theory framework agrees with STS/ANT scholars that attempts by actors to articulate issues, innovations, and controversies change these issues, innovations, and controversies; it concurs with the STS/ANT trope that nonhuman actors play a role in the diffusion of innovations and controversies. But it parts from the ANT paradigm in distinguishing levels of agency between types of actors and in suggesting that attributes such as age, culture, etc. account for how actors connect with other actors and with issues, innovations, and controversies.

We begin by providing a brief overview of field theory, including critiques. We then examine actor-network theory and social network analysis and suggest ways in which online field theory can draw on these network frameworks to account for actor responses to innovation. We show that the field framework has been applied to online settings and argue that it enables us to address questions ignored by network approaches. We present our analytical framework, articulated around the notions of agency and boundary. We illustrate this conceptual exploration by referring to examples of online activist and news fields. We argue that the evolution from the link economy (Web 1.0) to the like economy (Web 2.0) whereby algorithms customize content in response to user engagement with content changes the structure and dynamics of online fields. We finish by outlining some suggestions for further research into online fields.

Fields

Definition

Field theory initially emerged in the physical sciences through “various attempts to comprehend how one thing could affect another without some substantive medium” (Levi Martin and Gregg 2013: 40); examples include gravity, electricity, and magnetism. Gestalt psychologists adapted these notions in order to determine why seemingly independent elements are interdependent in ways that give rise to an overall set of dynamics (Kölher 1929). Fields thus emerge from the constant reciprocal adjustment of elements in relation to one another (Levi Martin and Gregg 2015: 43).

Social scientists added a utility-maximizing dimension. In anthropology, Turner (1974) defined fields as aggregations of relationships between actors competing for similar prizes or values. The most well-known social-scientific conceptualization of fields came from sociologist Pierre Bourdieu, who also focused on the economizing strategies of agents, as well as on the relationships of power that constitute and shape social fields. To this end, the notion of “capital” was expanded to include both material and nonmaterial phenomena, including cultural, economic, social, and symbolic resources (Bourdieu 1984). In Bourdieu’s sociology, society is differentiated into a number of semiautonomous fields, internally coherent microcosms, governed by their own “game rules,” yet with similar basic oppositions – between economic and cultural capital, for example – and general structures (Bourdieu 1984). These spaces are both *fields of force* (power is unequally distributed) and *fields of struggle*: people try to maintain or modify these power relationships. Fields can be distinguished according to the capital that is valued in them: capital is “heteronomous” (external to the field) or “autonomous” (unique to the field) so that fields differ according to their degrees of relative autonomy from each other and particularly from the dominant political and economic field (Bourdieu and Wacquant 1992).

After capital and field, Bourdieu's third conceptual tool is "habitus," open systems of dispositions which people acquire through moving through life and which are both structured by fields and contribute to constitute fields as meaningful worlds (Bourdieu and Wacquant 1992: 127). For Bourdieu fields are characterized by a dialectic of distinction which ensures the constant production of change as new actors enter and challenge the incumbents' ability to define the legitimate principles of the division of the field (Bourdieu 1984). Differences in behavior between challengers and incumbents are also a central axiom of social movement theory, starting with Gamson's (1975) analysis of the success or failure of social protest groups at achieving their goals.

The early weblog field was defined by the opposition between the masculine-open space of issue-blogs, focused on "quality," recognized as significant by the traditional media and dealing with serious issues such as politics and technology, on the one hand, and the feminine-closed space of journals, dealing with daily life, emotions, and friends and based on "intimacy" on the other. Issue-bloggers routinely derided the "vacuousness" and "futility" of journals (O'Neil 2005). In other words, the capacity to attract prestigious connections from other fields and to attribute worth was intertwined with gendered collective values. Indeed the importance of discourse characterizing the enforcement of behavioral norms (such as "netiquette," "flames," "newbies") on Usenet pointed to the exclusive and prescriptive character of hacker culture (Lawley 1994). The field of computer virus writers featured an elitist and strongly gendered conception of technical expertise (O'Neil 2006), a conception shared by free software programmers whose ethic of "coding for code's sake" also enabled them to profit from the interest in being perceived as disinterested (O'Neil 2009, 2014). Social hierarchies which are increasingly less tolerated offline in liberal democracies thus found a haven in some sectors of the Internet.

Critiques

A number of objections have been leveled at field theory in general and at Bourdieu's conception in particular. They can be summarized as follows: field theory is overly deterministic; it purports to exclusively unveil social domination; it is simply adding an unnecessary analytical level to reality. We address each of these critiques in turn.

Field Theory Is Deterministic

The charge of determinism detects a tautological relationship between the habitus of agents and the structures or fields within which they operate. However for Bourdieu "social agents will *actively* determine, on the basis of [...] socially and historically constituted categories of perception and appreciation, the situation that determines them" (Bourdieu and Wacquant 1992: 136). In other words determination exists, but so does individual autonomy; neither are pure and absolute.

A recent interpretation of the field framework emphasizes the notion of social skill, rather than that of habitus: drawing on social movement framing theory (Snow

et al. 1986), Fligstein and McAdam (2012) define such skills as the way in which actors are endowed with “a highly developed cognitive capacity for reading people and environments, framing lines of action, and mobilising people” (17). Social skills are central to Fligstein and McAdam’s concept of “strategic action fields,” constructed mesolevel social orders in which individual or collective actors interact with one another on the basis of shared understandings about the purposes of the field, relationships to others in the field (including who has power and why), and the rules governing legitimate action in the field.

Field Theory Purports to Unveil a Hidden Reality

The aim of Bourdieu’s sociology is to uncover forms of the social unconscious through which dominant social actors reproduce their domination. This critical approach implies that social actors are in a sense unaware of their exploitation, that they are dominated without realizing it. The point of view from which this unveiling social science speaks has therefore been criticized: sociologists are perceived to be elevated above ordinary social actors, solely capable of perceiving the hidden side of reality, in the shape of macro-social structures (Castoriadis 1986; Latour 2005). At the same time, asserting that, for example, marine biologists have accumulated years of training and experience which enable them to account for phenomena which untrained eyes cannot fathom seems uncontroversial. Why then should it be shocking to suggest that sociologists have been trained to decipher – let us say – complex statistical data?

There are two aspects to the critique of unveiling. The first has to do with critical sociologists’ perhaps overblown sense of their political role. This is because they intermingle their politics with their analytics, something which according to Bourdieu is forced on them by the revelatory potential of their research: “by uncovering the social mechanisms which ensure the maintenance of the established order and whose properly symbolic efficacy rests on the misrecognition of their logics and effects, *social science necessarily takes sides in political struggles*” (Bourdieu and Wacquant 1992: 51). Sociologists, being armed with the tools of critical science, have “a responsibility for playing a key role in modern political life” (Swartz 2003: 819, n.21). The objection to these quasi-messianic pretensions has merit – people are not “cultural dopes,” they are aware that exploitation and domination occur, and they try to challenge them – but it is often stretched to such an extent that any systematic discussion of social domination becomes impossible (Frayssé and O’Neil 2015).

Field Theory Adds an Unnecessary Analytical Level to Reality

A second aspect of the questioning of unveiling is epistemological. It suggests that the very act of superimposing an overarching construct such as “fields” over reality amounts to adding a layer of complexity above actors which is not only arbitrary but unnecessary: all that is needed is to trace associations created by the actions of the actors involved in a controversy. We address this critique in the next section.

Networks

Actor-Network Theory

The critique that field theory (or any theory that purports to detect regularities in society) adds an unnecessary and perhaps artificial macro-level structure above reality is a key point made by actor-network theory (ANT). It is worth quoting ANT's most famous proponent Bruno Latour at length: "Instead of trying to simulate and predict the social orders, we wish to acknowledge the limitations of the simulation approach for collective systems and prefer letting the agents produce a dynamic and collect the traces that their actions leave as they unfold so as to produce a rich data set . . ." (Latour et al. 2012: 605). The definition of what one is looking at, and of what one is looking for, is indeed fundamental. We outline in section "[A Theory of Online Fields](#)" how we define a field empirically but explain here why we diverge with ANT when it comes to boundaries, actors, and connections.

Boundaries

If we observe a sporting match and note that players are wearing similar clothes and footwear, acting in concert for a common purpose, and obeying similar rules, all of which are quite distinct than that of their spectators, then we can make a legitimate case that they constitute a distinct social space, however temporary; naturally they are connected to the family members, friends, and acquaintances watching them, to other players in other games, and so on, but it is safe to say that these ties will have limited bearing on the outcome of the game. We contend that a similar case can be made for online spaces (though their boundaries are more fluid than that of a sporting contest): participants are there for a reason, which has nothing to do with the researcher's construction of an object, or with a web surfer's online travels; no matter from which portal one enters, or the manner in which one interacts with other actors, the collective purpose of the participants remains their own.

The above quote from Latour and colleagues makes it clear that ANT is not designed nor intended for use in the analysis of social orders (simulation and prediction are tools of analysis). Johan Söderberg (2011) writes that ANT's *a priori* assumption about always working locally and moving outward results in "severe difficulties in explaining observations which are consistent over space and time." Suggesting that local networks can be stretched indefinitely to cover the global, macro-perspective, provided that the material traces are accounted for, is difficult to achieve in practice.

Actors

An oft-mentioned contribution of ANT is to incorporate nonhuman actors into the network of connections and translations (Latour 2005). To return to the sports field, for example, there is no doubt that the quality of the pitch and ball play a significant role, or that the game would be vastly different without the referee's whistle or

the goal posts. Yet there is a fundamental difference in terms of agency between nonhuman and human actors: the whistle cannot blow itself; the ball cannot score a goal of its own volition. Both are dependent on human intervention. Similarly online there is a need to distinguish between actors who can autonomously make connections (such as people and, arguably, “bots”) and those who, though enabling important affordances in the diffusion of activism and controversies, rely on others to connect (to) them, such as Twitter hashtags, for example. It is also misguided to treat the algorithms that orient interactions across networks as “just another actor”: non-algorithmic actors have no choice as to how algorithms affect them, so it makes better sense to define algorithms such as Google’s PageRank as governance institutions whose influence stretches over the whole field.

Connections

Not all connections are equal. It is far easier to create connections in Web 2.0 (e.g., by retweeting or liking a post) than on Web 1.0, where hyperlinks have to be written into website link pages. Connections should accordingly be interpreted differently. Assuming that connections are unproblematic also overlooks a key fact, which is that actors may choose not to connect to one another. In the online environment, where making connections is at once costless and public, the absence of connections is highly significant (Ackland and O’Neil 2011).

Social Network Analysis

In recent years the availability of enormous amounts of socially generated digital trace data (sometimes known as “big data”) has led physical and computer scientists to adopt and extend network-theoretic approaches for studying social behavior. A major focus of network science has been the development of models of “social contagion,” in which information spreads smoothly and continuously across nodes (e.g., Myers and Leskovec 2012; Onnela and Reed-Tsochas 2010). However, while much is known about how content spreads on the Internet, less attention has been paid to online economies of worth: why is item *x* deemed interesting or valuable by people, whereas item *y* is found to be the opposite? This is all the more important when it comes to activism or political news, as successive individual decisions to connect with specific issues may have far-reaching societal consequences. In our view, the contagion framework leaves a number of important questions unanswered: do campaigns and issues unfold uniformly, or do they follow patterns of development? How does the discursive work of people involved in creating or spreading issues operate? What attributes of actors make them trusted sources of information? If it is agreed that the characteristics of an innovation, of potential adopters, and of the environment affect diffusion (Wejnert 2002), alternative understandings of how information spreads are required.

Though actors can be labeled to reflect individual cultural attributes, network approaches by default or on their own do not account for reflexivity, such as evolving group preferences. What is needed is a field theory combined with network

approaches: the online field framework can explain how patterns of relations between networked actors are organized in collectively significant ways.

A Theory of Online Fields

With the availability of digital data, there is a lot of “noise” to sort through, so it is important to use both qualitative and quantitative approaches, both discourse analysis and network analysis. Chateauraynaud (2014) attempts to resolve the epistemic contradiction between network mapping and the analysis of arguments located close to the discursive and dialogic activity of actors by referring to “discursive regimes” which emerge with controversies, are organized around “semantic knots,” and operate through a series of oppositions; further, he groups together narrative and argumentative variants which have a “common look.”

Online fields resemble these “regimes” inasmuch as they are constellations of issues and actors who both coordinate and compete over a collective purpose, that is to say the collective understanding of what matters. In field theory social relations are made of both social structures, in other words objective differential possession of capital (in the academic field “everyone knows” that university A is more well-endowed and prestigious than university B) and social interactions (researchers from those two institutions may decide to collaborate and write papers together). Objective relations of power “exist even if there is no interaction and this fact escapes the attention of symbolic interactionists or social network analysts” (de Nooy 2003, p. 317). Hence an actor’s sudden entry or withdrawal might substantially change a network’s metrics, and hence its shape; whereas the boundaries of a field would not be affected.

Agency

Contrary to ANT, the online field framework begins with the recognition that there are three kinds of entities with varying levels of agency present: primary actors, secondary actors, and algorithms. The first type of entity represents individuals, groups, or organizations. We refer to such entities collectively as “primary actors,” capable of making connections among themselves in social space, as well as connections to the second type of entity. A primary actor on a field is therefore any entity that participates in the construction of the field by facilitating aggregations and connections, by making judgments, and by attempting to influence who or what is connected to the field, for example via the adoption of issues.

We expand further on our definition of primary actors below when we discuss two examples of online fields: Web 1.0 ([www hyperlink networks](#)) and Web 2.0 (Twitter). Web 1.0 fields are homogenous, comprising only social movement organizations (SMOs), while Web 2.0 (Twitter) fields are heterogeneous, comprising organizations and individuals (publics) (Table 1).

Table 1 Web 1.0 and 2.0 online fields

	Online social movements Web 1.0 (WWW hyperlink networks)	Networked publics Web 2.0 (Twitter)
Affiliation	Long-term commitment of members to a cause	Transient connections of organizations and individuals
Composition (primary actors)	Homogeneous – websites of social movement organizations	Heterogeneous – Twitter accounts for organizations, individuals
Composition (secondary actors)	Website text content (e.g., meta keywords)	Hashtags
Frames	Organizational – fixed collective action frames	Personalized – actors can create or remix frames
Capital (in social space)	Links are few, meaningful, and durable (e.g., hyperlinks on “links page”)	Endorsements are numerous, trivial, and soon superseded (e.g., “mention” or “retweet”)
Governance (legal)	Distant governing body. ICANN, which regulates Internet protocols and standards, does not intervene to regulate website content	Active governing body. Platform owners regulate aspects of the field, i.e., Twitter Corp do not prevent people from using particular hashtags unless in violation of language policies
Governance (algorithmic)	Search algorithms have limited impact on field content	Feed algorithms may have profound impact on what information is made available

The second type of node is a textual representation of the topics or issues that the actors are engaging in, or concerned about – we refer to these nodes collectively as “secondary actors.” Issues exist in semantic space, and the connections between issues are made by actors, via their use of text content in Web 1.0 or Web 2.0 environments. While a hashtag’s socio-technical affordances can contribute to defining an online activist field on Twitter, a hashtag does not have agency in that it cannot choose whether to make a connection with another actor or not.

There are two main actions available to primary actors in an online activist field. Primary actors can make connections to other primary actors in social space by hyperlinking in Web 1.0 or replying/mentioning/retweeting in Twitter; we referred to possible motivations above (see also Ackland and O’Neil 2011). Second, primary actors can make decisions to connect to secondary actors (issues) by using particular keywords on websites and in tweets, and it is on this action that we focus here.

It is necessary to define a special type of issue, *frames*, which are used to condense a complex social topic (e.g., an emergent social or environmental risk) into an easily communicable discursive form. Our understanding of frames comes from the social movement literature, where they are defined as action-oriented sets of beliefs and meanings which justify the activities of social movement organizations (Snow et al. 1986). In our model, frames are particular types of issues that are distinguished by their emergent nature and innovation. Frames are issues that are developed and adopted by primary actors in response to external events or as a way of changing the existing structure of a field. Frames therefore do not define a field,

and they are unlikely to be used by opposing groups or factions within a field, though over time a successful frame could come to define a field (by that stage, in our model, it would no longer be called a frame).

As mentioned previously, the presence of a third type of entity – algorithms – clearly illustrates the wrongness of treating all actors as equal: algorithms do not engage in interactions with other entities; they *govern* them. Google’s PageRank plays a key role in orienting actors between websites. However actors can navigate the World Wide Web without PageRank, and the algorithm’s impact is limited to search results. In contrast Twitter users have no way of telling to what extent the content they view on their newsfeed, or the speed at which that content is delivered, has been managed by Twitter’s algorithm.

Boundaries

ANT’s concern not to unduly project overarching structures onto local interactions is commendable. However it is the interplay of the different types of agency outlined above which leads to the emergence of a common understanding of what matters, of what is actually at stake in the game (scoring a goal, organizing a protest, making a risk issue visible). In some cases the socio-technical affordances of the Internet mean actors perform the boundary themselves: the use of certain hashtags effectively circumscribes online fields.

The theory of online fields was developed in the context of research into the use of networked media by activists. Individuals and organizations in pursuit of social change have embraced the distributed nature of the Internet, where actors can freely create connections to others, disseminate information, and coordinate action. By enabling values such as diversity, decentralization, informality, and grassroots democracy rather than centralization and hierarchy, information and communication technologies such as the Internet are said to fit perfectly the ideological and organizational needs of social movements (Castells 2004). Scholars originally focused on online social movements and interest groups striving to enact or resist social change through protests and campaigns (see Garrido and Halavais 2003; van Aelst and Walgrave 2004; Shumate and Dewitt 2008; Ackland and O’Neil 2011). Since the wave of protests of 2011, authors have examined how ICT enabled the amplification and spread of offline grassroots protests (Castells 2012; Gerbaudo 2016; Juris 2012). Researchers employing a quantitative perspective typically adopt a network science approach, whereby the properties of nodes, connections, and networks themselves are used to explain why and how protest spreads through society (González-Bailón 2014).

This research deals with very general notions such as “the Internet,” “social media,” or “Twitter,” obviating the fact that not only are there “online spaces which develop distinctive and well-ordered cultures” (Hine 2015: 38) but that these online spaces are frequently embedded in offline locales. At some point, actors will cease connecting to a hashtag. Other network connections will continue, and other fields may then appear.

Field Structure

The internal structures of online fields, like their boundaries, derive from the constant adjustments made by actors in relation to each other. Fields are conventionally represented by two axes and actors positioned along these according to the amount of “capital” they possess. In an online field, a clear distinction can be made between actors who have more resources and prestige and connect to many issues (at the top of the vertical axis which measures the “global volume” of capital) and those who do not. The horizontal axis represents common agreements over what matters, in other words the “structure” of capital. For example, in the online environmental field, it is possible to distinguish actors and issues that are local from those which are transnational. The literature on activist fields (Ackland and O’Neil 2011; O’Neil and Ackland 2018) and on journalistic fields (Craft et al. 2016; English 2016) adopts the classic Bourdieusian conceptualization of fields as dominated by powerful interests. These precedents can operate as a useful heuristic which can be built on to conceive, for example, the online journalistic field as structured around the actors’ economic, cultural, and social capital (vertical axis) and the actors’ principles of journalistic practice – public service, objectivity, autonomy, immediacy, and ethics – in gathering and reporting news (horizontal axis).

Once the agency, boundary and structure of the field are outlined, social network analysis can map relations between actors. The distinguishing feature of Internet sociality is that online interactions are extraordinarily more public than their offline counterparts. On the Internet there are no other means of expressing recognition and affiliation than through visible connections such as hyperlinks (in Web 1.0) and retweets, follows, and @replies (in Web 2.0). Online social relations are simplified versions of offline social relations, with far more basic communication options.

Applied Research into Online Fields: Web 1.0

Initial research into online fields by the authors sought to test out some core tenets of field theory. While social network analysis quantitatively measures the behavior of actors in networks, it does not provide hypotheses as to why this behavior occurs. In contrast field theory allows the formulation of hypotheses that can be tested using social network analysis. One such hypothesis pertains to a central aspect of behavior on fields: why do actors connect with issues? In addition to material connections, fields comprise actors’ mental representation of who and what matters, as well as “principles” or “rules” guiding the behavior of actors in fields. Field theory thus holds that the strategies of actors, such as their likelihood of embracing or rejecting innovations, derive in large part from their status as challengers or incumbents in fields. This quasi-orthodox principle is assumed by field theorists to be incontrovertibly correct, rather than empirically validated (Bourdieu 1985; Fligstein 2013).

Primary actors on online activist fields can adopt three different courses of action in the context of frames: innovate (i.e., create a frame or be an early adopter), co-opt an existing frame, or do nothing. The dynamics of adoption of a frame are illustrated

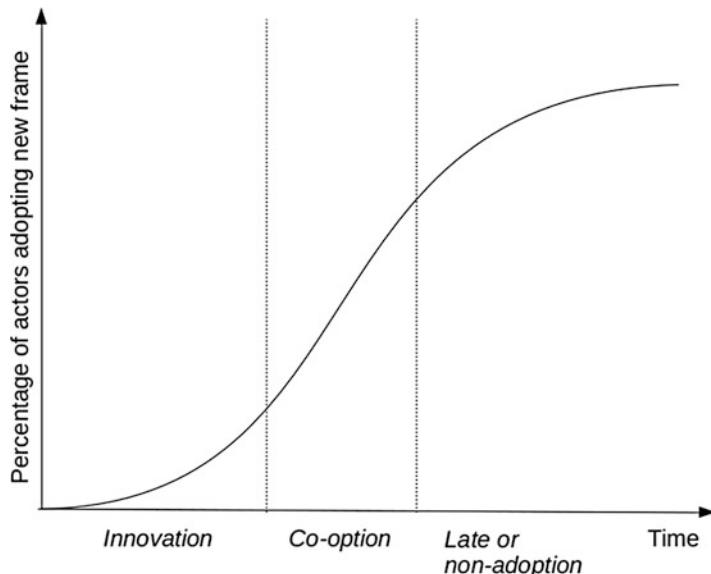


Fig. 1 Diffusion curves

using the so-called S-curve of innovation in Fig. 1. Primary actors who act as frame creators or early adopters can be referred to as “innovators,” while those who connect to a frame during the period when there is the biggest increase in awareness of the issue are labeled “co-opters.” Finally, those primary actors which are late to connect to the frame (or never connect to it) are the “laggards.”

Competition between primary actors in a field means that dominated challengers must struggle for space, and we propose that a key strategy used by actors attempting to gain influence in an activist field is frame innovation. Taking this argument to its logical conclusion leads to the following hypothesis: the lesser the influence of a primary actor in an online activist field, the greater the probability of the actor innovating by connecting to an emergent online frame. If the main strategy available to challengers is the creation of innovative claims and campaigns, how do dominant primary actors in the online activist fields address emergent issues? We contend that dominants in online activist fields will employ conservation strategies to maintain their influence and protect their issues, and hence will tend to connect less to new issues, compared with challengers.

Agency

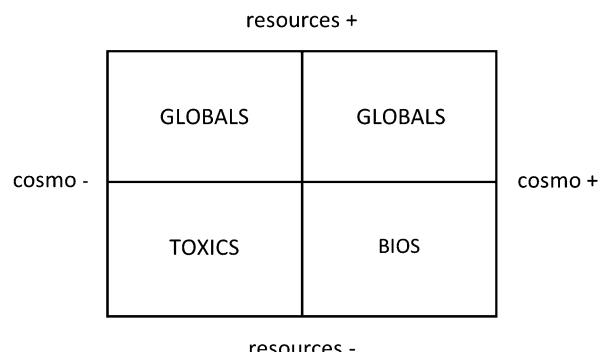
We can distinguish two types of text extracted from websites. *Field keywords* are expected to appear on any website in this field (e.g., the word “environment”) – their presence can in fact be used as a condition or test of whether an actor is a participant

in this particular field. *Frame keywords* are only likely to be used by an actor that is connecting to a specific issue or frame on the environmental activist field. In our previous work (Ackland and O'Neil 2011), we were not so stringent in using the presence of particular field keywords as a condition for including a website as an actor on the environmental activist field.

The collective purpose on which all environmental activists agree is the need to raise public awareness of environmental issues. The actors in the field were identified using techniques advocated by Rogers and Zelman (2002) for researching “issue networks,” including locating websites via querying search engines with relevant keywords and following hyperlinks from relevant websites (a form of snowball sampling). In order to establish that “objective relations of power” have an existence outside the mind of researchers, it is necessary that the unequal distribution of capital be incontrovertible. Here we suggest that in the environmental field “everyone knows” that organizations such as World Wildlife Fund are better endowed and more able to form connections to multiple campaigns than (for example) the Silicon Valley Toxics Coalition. We also contend that the degree of variation in the material proximity of these two organizations to their issue(s) is widely known and understood. We therefore propose that the online environmental field is structured by two main dimensions: organizational size (SMOs can range from small groups of unpaid volunteers to massive corporate-like organizations) and organizational focus (from local issues to transnational concerns). In field-theoretic terms, the first dimension corresponds to “economic capital” and the second to “capital specific to the field” or “cosmopolitan capital.”

In their study of the Australian environmental movement, Crook and Pakulski (2007) distinguish “green” (conservation-oriented) from “brown” (pollution and waste-oriented) environmental concerns. Building on this distinction, Fig. 2 positions three main SMO types on the online environmental field according to the specific combination of their organizational size and focus. Dominant actors, richly endowed in economic capital, are in the top half: such “Globals” are complex organizations who focus on a large number of issues ranging from the local to the transnational including climate change, forest and wildlife preservation, nuclear weapons, and sustainable trade. Economically dominated actors are to be found in

Fig. 2 The online environmental field



the lower parts of the field quadrant. “Toxics” such as the Silicon Valley Toxics Coalition are small organizations with a local focus on few issues including pollutants and environmental justice, whilst “Bios” are small organizations with a trans-national focus on few issues including genetic engineering, organic farming and patenting.

Boundary: Environmental Risk

In an environmental social movement, challengers connect to frames relating to the emergence of new environmental risks. Industrial development generates global risks which are incalculable, resulting in the “irrepressible ubiquity of radical uncertainty in the modern world.” Risks are based on “causal interpretations,” only existing initially in terms of what is known about them, and thus particularly open to “social definition and construction” (Beck 1992: 22). Though Beck rejects class as an explanatory variable, he argues that “some people have a greater capacity to define risk than others.” It is precisely this inequality which environmental SMOs seek to contradict by making heretofore imperceptible risks visible. A core stake among actors is the definition of which environmental risk (whether global warming, deforestation, biotechnology, pollutants, etc.) is the most significant. Exogenous shocks or disruptive events, such as the development of a new technology, thereby represent an opportunity for challengers to gain influence by developing new frames. The mapping of the hyperlink network confirmed the field structure: Globals were more dominant in terms of network centrality, and there was a clear division between the two less influential groups, who shared similar discourse but did not link to each other (Ackland and O’Neil 2011).

Analysis

We posit that a primary actor’s field location in an online social movement will be a key determinant of the probability that this actor participates in early frame development arising from a disruptive event, such as a new technology or a change in legislation. Using the terminology introduced in Fig. 1 above, we contend that challengers in dominated sectors of the field are more likely to be innovators, compared with dominants, when it comes to responding to emergent risk issues. In O’Neil and Ackland (2018), we investigate our hypothesis using hyperlink network and website content data from 161 environmental activist websites collected in 2006, and we also collect biennial data for the period 2002–2012 for a subset of these sites.

We focus on actors’ responses to nanoscience and technology (NST), the science of technology development at the atomic level, which is increasingly being used in a range of industries. We found that there was significant uptake in the online environmental field of NST as an issue of concern, with the growth of adoption reaching its apex in 2006. We found statistical support for our contention that challengers are more likely to engage with the emergent NST risk issue. Actors

engaged in issues relating to biotechnology – who were structurally in weaker positions – displayed a high level of adoption of the nanotechnology risk issue (as evidenced by the presence of terms relating to nanotechnology on participant websites). Thematically, there are striking similarities between the portrayal of biotechnology as likely to cause irreversible and unpredictable damage, the resistance to becoming dependent on multinational companies, and the calls for a moratorium which anti-biotechnology activists have historically put forward (Levidow 2000) on the one hand and activist discourse on nanoscience and technology (e.g., ETC 2003) on the other.

Challengers innovate, but *contra* orthodox field theory, instead of resisting change, dominant actors are behaving as co-opters, located in the middle section of the diffusion S-curve in Fig. 1, rather than in the last section. Contrary to the offline realm, it is not financially or symbolically costly for a social movement actor to adopt a new online frame: this may simply involve posting a relevant article on the organization's website, for example. Relatedly, the cost of endorsing or promoting a new frame that does not prove to be successful or ultimately in the interest of the organization is not going to be so great so as to act as a disincentive to participation. Incumbents in online fields are more likely to experiment than their offline counterparts.

A Web 2.0 Activist Network, but Not a Field

The rise of the Writeable Web or like economy whereby anyone with Internet access can not only produce media but evaluate or “like” online content has led to the rise of new forms of aggregation such as networked publics, which pose unique challenges to field theory.

Agency

Whereas classic theories of collective action emphasize the role of social movement organizations or SMOs (McAdam et al. 1996), personalized action frames shift the focus away from the SMO and onto networked individuals, who use frames to create or join loose coalitions of networked actors or “networked publics” (Ito 2008; boyd 2010).

Our second case study is Web 2.0 online activism, and we focus on the medium of Twitter. Primary actors (individuals, organizations) connect to one another in social space via retweets, @mentions, @replies, and following relationships. Primary actors also promote issues via the use of hashtags and, in doing so, create ties between these issues in semantic space (two hashtags are connected in semantic space if a Twitter user features both hashtags in a tweet).

Hashtags enable ad hoc connections between people, resulting in what Bruns and Burgess (2011) call “ad hoc publics.” Yang et al. (2012) argue that Twitter hashtags do not only operate as bookmarks helping to categorize content: hashtags “serve as

both a tag of content and a symbol of membership of a community” (270) and Twitter users are aware of this dual function, as evidenced by comparing Twitter to other Web 2.0 sites: “the network density of hashtag communities is around a thousand times larger [on Twitter] than the network density among users, using the same tag(s) in Flickr, LiveJournal, or YouTube” (Yang et al. 2012: 264).

Boundary

Researchers stress the importance of physical space for the wave of protests which reclaimed urban squares, places, and parks since 2011 (Gerbaudo 2012; Juris 2012). Time also creates a boundary, as can be seen from the frequent use of dates as rallying cries by Web 2.0 activists. On a practical level, this enables simultaneous mobilizations in multiple locations, while symbolically it serves to signify a momentous beginning or milestone – see 15-M (15 May) in Spain or #Oct15 in the United States. October 15, 2011, was a global day of support for the Occupy Wall Street (OWS) occupation which involved 1,500 protests in 82 countries (Juris 2012). The collective purpose here was the defense of alternatives and resistance to austerity policies.

Provided an assumption is made that a Twitter activist network can operate as a field (we interrogate this assumption below), then it is possible to use OWS-related hashtags (#ows, #occupywallstreet) to define the boundaries of the OWS field on Twitter, with any actor who tweeted using either of these hashtags during the period being considered to be a part of the field. Analogously to the Web 1.0 case above, it is therefore possible to distinguish *field hashtags* which opponents on the field are equally likely to use from *frame hashtags* which are only likely to be used by a networked public that is pushing a particular frame. In the OWS context, the field hashtags include #ows and #occupywallstreet, while frame hashtags might be used by OWS actors who are campaigning on a particular issue or who are attempting to shape the movement in a particular way and who may face opposition within OWS. In the Australian political context, for example, we regard #auspol as a field hashtag since primary actors on the Australian political field from both the “right” and “left” side of politics use #auspol, while #marriageequality is an example of a frame hashtag, as it is unlikely that opponents of #marriageequality would use this frame.

Analysis

At this stage of analysis, it becomes clear that the choice of approach for defining the boundary of the Web 2.0 activist field, and hence which actors are part of the field, is crucial. If we use a field hashtag (or set of field hashtags) to circumscribe a networked public such as Twitter activists, the only information about actors accessible through ethical digital trace data analysis is that which is made public by these actors: however in many cases, biographical information is either useless (humorous or irrelevant) or simply absent. In such a situation, can we really speak of a “field”

when we ignore who the participants are? Without reliable information, we cannot draw a field, and are therefore left with a network, but no field.

Ackland et al. (2018a) used field hashtags (#ows, #occupywallstreet) to demarcate the space and studied the dynamics of adoption of a particular hashtag, #S17, which emerged on the OWS field around March 5, 2012. The hashtag refers to September 17, the first anniversary of the OWS movement, and was meant to indicate that OWS was not a fleeting protest or fad, as evidenced by the following tweet: “One year young, and just getting started. #OWS #S17.” Though #S17 was primarily used by recent entrants, the lack of reliable information about who had status and why meant it was difficult to conceive of this online network as an online field; #S17 could not be considered a frame hashtag, and statistical tests of the adoption of the hashtag were unlikely to be testing the primary field-theoretic hypothesis that dominated actors are more likely to adopt an emergent frame hashtag.

In summary, the question of whether an online network can be analyzed as an online field hinges around the identity of the actors in the network. In the case of the Web 1.0 environmental organizational field, the identity of the actors was evident from the websites, so the relative status of actors on the field could be determined. In contrast, with the example of the Twitter activist network, the identity of the actors was uncertain; the relative status of actors was unknowable; hence it could not be reasonably determined to what extent online field dynamics were at play. In networked publics individuals can create multiple accounts, or not identify themselves, at no cost. In contrast an environmental organizational organization (or any other institutional actor) who did the same would face significant reputational costs.

A Web 2.0 News Field as a Filter Bubble

The limitations in the abovementioned study show that when digital traces are a primary source of data, (semi-)institutional settings, where the status of organizations is knowable, may be more suited to field analysis. The previous section showed that the study of networked publics as fields (e.g., OWS on Twitter) is problematic because these publics are by definition heterogeneous. But this does not preclude the application of field theory to the study of Web 2.0, in the case of the official Twitter handles of social movement organizations or of individuals working in a particular professional field, such as journalism.

Agency

The evolution from the “link economy” to the “like economy” has deeply modified the online landscape, and it is vital that an approach for studying online fields be able to account for the role of algorithmic customization and personalization which allow individual actors to collectively shape fields. The debate around “filter bubbles”

(Pariser 2011) is not new. Indeed the loss of a common political discourse resulting from a fragmenting of the online population into narrowly focused groups of individuals solely exposed to information confirming previously held opinions and biases has been previously referred to as “echo chambers” (Sunstein 2001) and “cyberbalkanization” (Van Alstyne and Brynjolfsson 2005). However, while the concepts of filter bubbles and echo chambers are widespread, there is scant empirical evidence for their existence and impact with some researchers simply assuming that they exist and that something needs to be done about them.

By explicitly considering how people – in particular, journalists working in the news media field – make decisions about whether and how to engage with news, the online field framework can contribute to understanding how filter bubbles, when operating in influential sectors of society such as the journalistic field, can be detrimental to the plural public discourse that is essential to democracy.

Boundary

The discussion above has highlighted the fact that boundaries are key to establishing whether a set of online actors in fact constitute a field, and this is particularly important in Web 2.0 environments which facilitate the formation of networked publics. A field-theoretic examination of journalist behavior on social media such as Twitter should therefore start with a population frame of journalists who are active on Twitter. This type of study should be contrasted with a related study by Ackland et al. (2018b) which sought to examine the role of national culture (Australia, Korea) and political affiliation (right, left) in engagement with news on Twitter. In the latter study, the Twitter data were collected by first identifying news stories that had been tweeted by a representative sample of news brands on a representative sample of days and then finding all of the Twitter actors who engaged with these news stories by retweeting them. In this study the boundary is such that the dataset includes journalists as well as anonymous or pseudonymous members of the general public: though there is uncertainty, the presence of institutional actors whose relative status is known means it could more reasonably be analysed in field-theoretic terms.

Analysis

A field-theoretic conceptualization of journalism will allow an assessment of whether certain categories of actors (incumbents or challengers, members of social niches or isolates) and dominated or dominant sectors are more or less likely to take part in the formation of filter bubbles.

The field-theoretic approach can help address the impact of political polarization on the spread of controversies, campaigns, and innovations. Here we can draw inspiration from Haussler et al.’s (2017) analysis of levels of contentiousness in hyperlink networks discussing climate change in the United States and Germany.

We can tell whether a field is contentious or not by measuring how much one issue dominates. High-contentious fields have opposing viewpoints of equal strength, whereas in low-contentious fields hegemonic actors monopolize public discourse. The degree of partisanship (how opposing viewpoints are balanced) depends on the field: there is more homophily in low-contention fields as dominants feel they can ignore challengers (Haussler et al. 2017).

According to Koopmans (2004), high-contentious settings exhibit greater political conflict than low-contentious ones. High-contentious settings demonstrate not more activity, but more reciprocal interaction as increasing amounts of communication are mobilized for contestation. In order to diminish conflicts resulting from interaction with dissenters, actors tend to engage in homophilic interactions (Monge and Contractor 2003: 223–239). In this sense filter bubbles are a specific kind of field characterized by very low contention and very high homophily. Future research could engage with the impact of filter bubbles on the trajectory of issues: for example, are issues accelerated centrifugally or slowed down when they hit a bubble?

Conclusion

Normative critiques of network approaches hold that focusing only on existing network properties prevents social network analysis, just like its more theoretically inclined cousin, actor-network theory, from accounting for the following question: why is it only certain types, or categories, or classes, of actors, often the same, which accumulate power? Network-theoretic methodologies do not consider the fairness of the distribution of resources between nodes (O'Neil 2011). In this chapter, the analytical critique of network-theoretic approaches does not reject such approaches for normative reasons: on the contrary, we build on their epistemological and methodological insights. Nonetheless, we have argued that fields enable a fuller understanding of the motivations and actions of actors than networks. Examining strategic decisions by actors in different cultural and social settings cannot be done with actor-network theory (which refuses to consider actor decisions), so it needs to refer to fields, verified by social network analysis.

References

- Ackland R, O'Neil M (2011) Online collective identity: the case of the environmental movement. *Soc Networks* 33(3):177–190
- Ackland R, O'Neil M, Perez C (2018a) Collective action frames on Twitter. Sociology Working Paper, Australian National University
- Anderson C (2008) The end of theory: the data revolution makes the scientific method obsolete. *Wired*. 23 June
- Beck U (1992) Risk Society: Towards a New Modernity. London: Sage
- Bourdieu P (1984) Distinction: a social critique of the judgement of taste. Harvard University Press, Cambridge, MA

- Bourdieu P (1985) The social space and the genesis of groups. *Theory Soc* 14:723–744
- Bourdieu P, Wacquant LJD (1992) An invitation to reflexive sociology. University of Chicago Press, Chicago
- boyd d m (2010) Social Network Sites as networked publics: affordances, dynamics, and implications. In: Papacharissi Z (ed) Networked self: identity, community, and culture on Social Network Sites. Routledge, London, pp 39–58
- Brunn A, Burgess JE (2011) The use of Twitter hashtags in the formation of ad hoc publics. In: Proceedings of the 6th European Consortium for Political Research (ECPR) general conference 2011. University of Iceland, Reykjavik
- Castells M (2004) The power of identity. The information age: economy, society and culture, vol 2, 2nd edn. Blackwell, London
- Castells M (2012) Networks of outrage and hope: social movements in the Internet age. Wiley, Hoboken
- Castoriadis C (1986) Les carrefours du labyrinthe II: Domaines de l'homme. Seuil, Paris
- Chateauraynaud F (2014) Trajectoires argumentatives et constellations discursives: Exploration socio-informatique des futurs vus depuis le nanomonde. *Réseaux* 188(6):121–158
- Craft S, Vos TP, Wolfgang JD (2016) Reader comments as press criticism: Implications for the journalistic field. *Journalism* 17(6): 677–693
- Crook S, Pakulski J (2007) Shades of green: Public opinion on environmental issues in Australia. *Australian Journal of Political Science*, 30, 39–55
- de Nooy W (2003) Fields and networks: correspondence analysis and social network analysis in the framework of field theory. *Poetics* 31(5–6), 305–327
- ETC (2003) No small matter II: the case for a global moratorium. *Occas Pap Ser* 7(1). http://www.etcgroup.org/sites/www.etcgroup.org/files/publication/165/01/occ.paper_nanosafety.pdf. Accessed 22 Sept 2017
- Fligstein N (2013) Understanding stability and change in fields. *Res Organ Behav* 33:39–51
- Fligstein N, McAdam D (2012) A theory of fields. Oxford University Press, Oxford, UK
- Frayssé O, O’Neil M (2015) Hacked in the USA: prosumption and digital labour. In: Frayssé O, O’Neil M (eds) Digital labour and prosumer capitalism: the US matrix. Palgrave, Basingstoke, pp 1–19
- Gamson WW (1975) The strategy of social protest. Dorsey Press, Belmont
- Garrido M, Halavais A (2003) Mapping networks of support for the Zapatista movement: applying social network analysis to study contemporary social movements. In: McCaughey M, Ayers M (eds) Cyberactivism: online activism in theory and practice. Routledge, London, pp 165–184
- Gerbaudo P (2012) Tweets and the streets: social media and contemporary activism. Pluto Press, London
- Gerbaudo P (2016) Social media teams as digital vanguards: the question of leadership in the management of key Facebook and Twitter accounts of Occupy Wall Street, Indignados and UK Uncut. *Inf Commun Soc* 20(2): 185–202
- González-Bailón S (2014) Online social networks and bottom-up politics. In: Dutton WH, Graham M (eds) Society and the Internet: how networks of information and communication are changing our lives. Oxford University Press, Oxford, UK, pp 209–221
- Gruzd A, Wellman B, Takhteyev Y (2011) Imagining Twitter as an imagined community. *Am Behav Sci* 55(10):1294
- Haussler T, Adam S, Schmid-Petri H, Reber U (2017) How political conflict shapes online spaces: a comparison of climate change hyperlink networks in the United States and Germany. *Int J Commun* 11. Available at <http://ijoc.org/index.php/ijoc/article/view/5644>. Accessed 22 Sept 2017
- Haythornthwaite C (2007) Social networks and online community. In: Joinson A, McKenna K, Reips U, Postmes T (eds) Oxford handbook of internet psychology. Oxford University Press, Oxford, UK, pp 121–136
- Hine C (2015) Ethnography for the Internet. London: Bloomsbury Academic
- Ito M (2008) Introduction. In: Varnelis K (ed) Networked publics. MIT Press, Boston

- Jackson MH (1997) Assessing the structure of communication on the world wide web. *J Comput-Mediat Commun* 3(1). <http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.1997.tb00063.x/abstract>. Accessed 22 Sept 2017
- Juris JS (2012) Reflections on #occupy everywhere: social media, public space, and emerging logics of aggregation. *Am Ethnol* 39(2):259–279
- Kölher W (1929) Gestalt psychology. Liveright, New York
- Koopmans R (2004) Movements and media: selection processes and evolutionary dynamics in the public sphere. *Theory Soc* 33(3/4):367–391
- Latour B (2005) Reassembling the social: an introduction to actor-network-theory. Oxford University Press, Oxford, UK
- Latour B, Jensen P, Venturini T, Grauwin S, Boullier D (2012) ‘The whole is always smaller than its parts’ – a digital test of Gabriel Tardes’ monads. *Br J Sociol* 63(4):590–615
- Lawley E (1994) The sociology of culture in computer-mediated communication: an initial exploration. <http://www.williambowles.info/mimo/refs/bourdieu.html>. Accessed 22 Sept 2017
- Levi Martin J, Gregg F (2015) Was Bourdieu a field theorist? In: Hilgers M, Mangez E (eds) Bourdieu’s theory of social fields: concepts and applications. Routledge, Oxon, UK, pp 39–61
- Levidow L (2000) Pollution metaphors in the UK biotechnology controversy. *Sci Cult* 9(3): 325–351
- Marres N, Moats D (2015) Mapping controversies with social media: the case for symmetry. *Social Media + Society* 1:1–17
- McAdam D, McCarthy JD, Zald MN (1996) Comparative perspectives on social movements: political opportunities, mobilizing structures, and cultural framing. Cambridge University Press, Cambridge, UK
- Monge P, Contractor N (2003) Theories of Communication Networks. Oxford: OUP
- Myers S, Leskovec J (2012) Clash of the contagions: cooperation and competition in information diffusion. In: Brussels, IEEE international conference on data mining (ICDM)
- O’Neil M (2005) Blogs and authority. Blogtalk Downunder, University Technology Sydney, 19–22 May. http://inccsub.org/blogtalk/?page_id=107. Accessed 22 Sept 2017
- O’Neil M (2006) Rebels for the system? Virus writers, general intellect, cyberpunk and criminal capitalism. *Continuum* 20(2):225–241
- O’Neil M (2009) Cyberchiefs: autonomy and authority in online tribes. Pluto Press, London
- O’Neil M (2011) Domination & networks: a response to Nathaniel Tkacz. *J Peer Prod* 0. <http://peerproduction.net/issues/issue-0/debate-ant-and-power/domination-networks/>. Accessed 22 Sept 2017
- O’Neil M (2014) Hacking Weber: legitimacy, critique, and trust in peer production. *Inf Commun Soc* 17(7):872–888
- O’Neil M, Ackland R (2018) Competition in an online environmental social movement field. Under review
- Onnela J-P, Reed-Tsochas F (2010) Spontaneous emergence of social influence in online systems. *Proc Natl Acad Sci* 107(43):18375–18380
- Pariser E (2011) The filter bubble: how the new personalized web is changing what we read and how we think. Penguin Press, New York
- Park HW, Thelwall M (2008) Link analysis: hyperlink patterns and social structure on politicians’ web sites in South Korea. *Qual Quant* 42(5):687–697
- Rogers R, Zelman A (2002) Surfing for knowledge in the information society. In: Elmer G (ed) Critical perspectives on the Internet. Rowman & Littlefield, Lanham
- Rogers R, Sánchez-Querubín N, Kil A (2015) Issue mapping for an ageing Europe. Amsterdam University Press, Amsterdam
- Shumate M, Dewitt L (2008) The north/south divide in NGO hyperlink networks. *J Comput-Mediat Commun* 13:405–428
- Snow DA, Rochford BR Jr, Worden SK, Benford RD (1986) Frame alignment processes, micro-mobilization, and movement participation. *Am Sociol Rev* 51:464–481

- Söderberg J (2011) ANT & Hegelian Marxism. *J Peer Prod* 0. <http://peerproduction.net/issues/issue-0/debate-ant-and-power/ant-hegelian-marxism/>. Accessed 22 Sept 2017
- Sunstein C (2001) Republic.com. Princeton, NJ: Princeton University Press
- Swartz D (2003) From critical sociology to public intellectual: Pierre Bourdieu and politics. *Theory Soc* 32:791–823
- Turner V (1974) Dramas, fields and metaphors. Cornell University Press, Ithaca
- van Aelst P, Walgrave S (2004) New media, new movements? The role of the Internet in shaping the ‘anti-globalization’ movement. In: van de Donk W, Loader B, Nixon PG, Rucht D (eds) Cyberprotest. New media, citizens and social movements. Routledge, London/New York, pp 97–122
- Van Alstyne, M. and Brynjolfsson, E. (2005). Global village or cyber-balkans? Modeling and measuring the integration of electronic communities. *Management Science*, 51(6):851–868
- Wejnert B (2002) Integrating models of diffusion of innovations: a conceptual framework. *Annu Rev Sociol* 28:297–326
- Wellman B et al (2003) The social affordances of the Internet for networked individualism. *J Comput-Mediat Commun* 8(3):0–0
- Yang L, Sun T, Zhang M, Mei Q (2012) We know what @you #tag: does the dual role affect hashtag adoption. In: Proceedings of the 21st international conference on world wide web. ACM, New York, pp 261–270



Digital Activism Within Post-Fordism: Interventions Between Assimilation and Exclusion

26

Alexandra Reynolds

Contents

Introduction	470
Barriers to Effective Critique Within Post-Fordism	471
Tactical Media and Hacktivism	474
Tactic One: Blocking Information Flows to Hegemonic Networks	477
Tactic Two: Hijacking and Reprogramming Powerful Networks	479
Tactic Three: Critical Mapping as the Production of Networks of Counterpower	481
Tactical Media, Transience, and Duration	483
Conclusions	486
Cross-References	486
References	486

Abstract

This chapter explores structural barriers to effective critical practice in Post-Fordist capitalism, with reference to Jacques Rancière's Consensus Democracy, Manuel Castells' Network Power, Zygmunt Bauman and David Lyon's theories of Liquid Power, Luc Boltanski and Eve Chiapello's work on New Capitalism, and Jodi Dean's work around Communicative Capitalism. The chapter introduces a range of digital tactics and techniques successful in disrupting recent hegemonic forms of power. Examples of successful digital activism are drawn principally from histories of Tactical Media and Hacktivism. The chapter closes by considering the continued value of existing tactical and hacktivist techniques in a Post-Trump, Post-Brexit world, where the hegemonic rhetorical and cultural dynamics of liberal consensus have seemingly shifted.

A. Reynolds (✉)

Research, Innovation and Enterprise, Solent University, Southampton, UK
e-mail: alex.reynolds@soton.ac.uk

Keywords

Consensus democracy · Network power · Information capitalism · New capitalism · Surveillance · Hacktivism · Tactical media · Digital activism

Introduction

This chapter will explore tactics and techniques used by artists and collectives working digitally within the realm of cultural activism, investigating modes of working developed specifically to counter hegemonic power in Post-Fordist capitalism. Barriers to effective sociocultural critique are described here with reference to various theories of Post-Fordism, using a process of bricolage. Theories include Jacques Rancière's Consensus Democracy (1999), Zygmunt Bauman and David Lyon's theorization of Liquid Power (2013), Manuel Castells' Network Power (2009), Luc Boltanski and Eve Chiapello's work around New Capitalism (2007), McKenzie Wark's writing on Information Capitalism (2004), and Jodi Dean's exposition of Communicative Capitalism (2008). Though distinct, these theories share the recognition that an onus on consensus and an imperative for visibility within Post-Fordism make critical gestures extremely difficult to enact; and that non-tactical attempts at criticality often result either in apolitical assimilation of interventions into the mainstream or, conversely, absolute exclusion from the discursive field.

In light of this recognition, the chapter goes on to explore a range of effective digital activism drawn from histories of Tactical Media and Hacktivism. Case studies are analyzed in relation to their ability to evade both assimilation and exclusion and actively perform new cultural narratives through what McKenzie Wark terms "Expressive Politics" (2004). Successful examples operate in relation to what Rita Raley has called the "systempunkt," referring to areas in the contemporary system of power which will "collapse the target system if destroyed" (2009, 11). Examples include strategies of intervention which variously block, hijack, and reprogram hegemonic communications networks, operating in an agile, tactical way to refuse and subvert the depoliticizing influences of Post-Fordist capitalism.

The chapter goes on to consider concerns with transience and short-termism in relation to the efficacy of Tactical Media (Lovink and Rossiter 2005) and sets out potential responses to this using Nathan Martin's notion of generative "parasitic media" forms (2003). Durational tactical frameworks for action will also be explored through the defensive structural architecture of WikiLeaks. Though problematic in its recent activities, this site is considered worthy of note as a tactical cultural form capable of resisting both assimilation and exclusion in a durational manner. In broader critical terms, these approaches can be understood as a digital incarnation of Situationist "*détournement*," a process where dominant power structures are productively subverted and new meanings performed, challenging hegemonic cultural narratives (Plant 1992, 86).

Finally, the chapter will consider the continued effectiveness of existing digital activist techniques given the current crisis of liberal capitalism and the populist

dynamic associated with this, raising questions around possible shifts in power in a cultural period associated with the presidency of Donald Trump and the UK's vote to exit the European Union.

Barriers to Effective Critique Within Post-Fordism

Recent capitalism has variously been termed Post-Fordism, New Capitalism, Network Capitalism, Information Capitalism, Liquid Power, and Consensus Democracy. For theorists such as Richard Sennett (2006), Eran Fisher (2011), and Manuel Castells (2009), Post-Fordist capitalism is structurally distinct from the way Industrial Capitalism functioned during the nineteenth century. As Max Weber theorized (1905), Industrial Capitalism was based around a rigid pyramid-like structure of centralized and hierarchized rule. Conversely, New Capitalism is understood to function through a networked structure (Castells 2009, 23) and to have ushered in a mode of power based in decentered and horizontal rule rather than rigid hierarchy (Sennett 2006, 29). This can be understood as a paradigm shift in the structuration of society from "a Fordist discourse of class to a Post-Fordist discourse of networks" (Fisher 2011, 6). We can also understand this form of capitalism as a continuation of the basic tenets of Michel Foucault's Biopower but one which operates through discursive power formations based in digital technologies rather than industrial production (Fisher 2011, 18) and functions principally through privatized circulation of information rather than accumulation of material goods (Lash 2002, 112, Wark 2004).

Castells is one theorist to have explored the underlying structure of Post-Fordism as a form of networked power. In the 2009 publication *Communication Power*, Castells suggests that "network-making power" functions under a binary logic of inclusion and exclusion. Marginalization from power occurs here when the subject is excluded from networks (2009, 42). Meanwhile, inclusion within a given network is defined by a consensual mode of operation, produced through rules governing collective participation and shared aims which constitute its dominant values of operation (2009, 43). To Castells, the dominant "ideas, visions, projects, frames" (2009, 46) of a network are set into play by "programmers" who have the power to constitute, program, and reprogram networks in terms of the shared goals which define them (2009, 46). Particularly powerful networks also gain strength by cooperating with other networks which share common goals through "switchers" which link networks through common goals and strategic collaborations (2009, 45). For Castells, networks of counterpower also exist. These networks function according to the same logic and structure as hegemonic networks but aim to subvert dominant discursive norms within society (2007, 248). In Castells' terms, counterpower can function in three distinct ways: by "aiming to introduce new instructions and new codes into network programs" (2009, 48), by blocking networks or the connections between them, or by developing their own networks, programs, and switchers (2009, 48–9).

The dynamic of power within Post-Fordism has been explored by theorists including Zygmunt Bauman and David Lyon. For these theorists, contemporary society is fundamentally still a form of Biopower and is therefore reliant on the surveillance, categorization, and monitoring of the population (2013). However, partly because of the influence of digital technology, surveillance is understood to have become granular, fluid, and all-encompassing, functioning in a three-dimensional way to define and filter as many categories of social classification as possible, aiming to ensure nothing is missed (Lyon 2010, 329, Bauman and Lyon 2013). Where surveillance in Early Biopower functioned to identify and discipline subjects operating outside of society's ideals, contemporary surveillance is said to categorize all subjects in a binary way toward societal inclusion or exclusion (2013, 58). Similar to previous forms of Biopower, social exclusion here remains "analogous to a verdict of social death" (2013, 81). However, the population in Post-Fordism also relies on surveillance as a means of being categorized as acceptable within the vicissitudes of societal classification. Correlatively, the active rendering visible of the self begins to act as a temptation within Late Biopower, leading to tendencies of self-surveillance (2013, 24).

There are significant correlations between Bauman and Lyon's Liquid Power and Rancière's notion of Consensus Democracy. In Rancière's terms, Consensus Democracy is a form of post-democracy which aims to render all societal subjects exponentially visible, either through self-determined or governmental strategies, and entails that, as far as possible, each subject is afforded a place, name, and subject position (1999, 103). This is not to say societal marginalization no longer occurs. Rather, the barrier between visible included subjects and invisible excluded subjects is removed and "replaced by a continuum of positions, starting at the top and going all the way to the bottom, mimicking basic school grading" (Rancière 1999, 116). Those who cannot be subjectified through the categories available are "countable only in the aggregate of those present: the aggregate of those who not only lack work, resources and housing, but also lack 'identity' and 'social ties'" (1999, 116).

In Rancière's terms, this dynamic of saturated visibility is understood to structurally prevent the possibility of effective political action, or "dissensus," within society. For Rancière, dissensus was previously enacted through the rendering visible of the excluded or the "uncounted" on the sociopolitical stage or "Distribution of the Sensible" (2000, 124). However, the exponential visibility of societal subjects within Consensus Democracy makes this impossible. As Rancière states, within Consensus Democracy there is a "presupposition of the inclusion of all parties and their problems that prohibits the political subjectification of a part of those who have no part, of a count of the uncounted" (1999, 116). With political action incapacitated by the saturated visibility of Consensus Democracy, society is managed and mediated solely by "police" power, defined by Rancière as "the set of procedures whereby the aggregation and consent of collectivities is achieved, the organization of powers, the distribution of places and roles, and the systems for legitimizing this distribution" (1999, 28).

Jodi Dean's theories of Communicative Capitalism further explicate this depoliticizing tendency, particularly in relation to the digital. For Dean,

Post-Fordism is marked by a consensual desire to identify and acknowledge diverse identities, resulting in the circulation of a diverse plethora of voices, opinions, and subjectivities within digital networks (2009). However, issues made visible on these networks are commonly isolated from their social context, meaning “real antagonism or dissent is foreclosed” (2008, 106). Rather than being treated as part of a complex and problematic sociocultural formation, matters are treated “in all their particularity, as specific issues to be addressed therapeutically, juridically, spectacularly or disciplinarily” (Dean 2008, 106). For Dean, politics remains possible (2009, 14). However, unless resistant voices are contextualized effectively, they will become mere “contributions to circulating content – not actions to elicit responses” (2008, 107). It therefore becomes essential to carefully and cohesively frame critical interventions in Dean’s terms. Acts of resistance must be “politicized, that is articulated together with other struggles, resistances and ideals in the course or context of opposition to a shared enemy or opponent” (Dean 2008, 106). Without this contextualization, critical gestures will be surveilled, policed, and assimilated into post-political rhetoric, without creating any change in the system they critique.

For Boltanski and Chiapello, the tendency to assimilate critical gestures into the smooth running of the capitalist economic system is central to Post-Fordism. In Boltanski and Chiapello’s terms, the bare economic bones of capitalism are insatiable and immoral (2007, 486), but the system itself is based in freedom and could not function effectively as forced labor (2007, 485–6). For this reason, capitalism needs a moral and boundaried discursive “spirit” which coerces people into engaging with the system, even though this spirit is in fact radically split from the economic base. In order to maintain a consensually acceptable spirit, capitalism can alter when faced with critique and protest (2007, 490–1). However, over time alterations to the cultural superstructure are assimilated into the economic base of society, aiding the functioning of capitalism itself. In other instances, critique simply functions to warn capitalism about the dangers threatening it (2007, 514) and allows for mollifying changes to be made to the spirit of society without altering the existing conditions of its economic base. Boltanski and Chiapello suggest particularly potent critical interventions could displace the dominant form of capitalism and force real progressive change within society’s economic base (2007, 491). However, the fundamental dynamic of societal assimilation within capitalism makes it challenging to implement critique without unwittingly strengthening the system. Consequently, it is crucial that critical interventions remain self-reflexive and are contextualized in relation to capitalism’s economic base.

The dynamic of power within Post-Fordism makes it difficult to successfully enact critical interventions. Interventions will commonly be assimilated into Consensus Democracy as another policed category in society’s saturated mapping of identity and subjectivity, monitored by layers of granular surveillance. Critical gestures which can be assimilated into consensus often operate on a purely discursive level, circulating rhetorically within society’s superstructure, or are otherwise assimilated into the economic base of capitalism itself, strengthening the workings of the dominant system. Meanwhile, acts of resistance which cannot be assimilated into

society's consensual norms will also be categorized and classified through surveillance but face juridical or disciplinary exclusion from powerful discursive networks as a result.

Tactical Media and Hacktivism

The tripartite tendencies of surveillance, assimilation, and exclusion within Post-Fordism have led to a range of activist responses, aiming to function self-reflexively and defensively to refuse, evade, and rewrite the depoliticizing tendencies of contemporary power. One area of extensive activity in relation to Network Power and digital activism is Tactical Media and Hacktivism. The next section of this chapter will explore these critical digital media forms, investigating methods used by these practices to evade the foreclosure of political dissensus within contemporary power.

Tactical Media was first developed in the 1990s and can be understood as a form of radical digital media practice which, as Rita Raley states, "emerged out of, and in direct response to, both the postindustrial society and neoliberal globalization" (2009, 7). Tactics are defined here in relation to Michel de Certeau's 1984 text *The Practice of Everyday Life*, which offers a set of techniques to intervene into disciplinary power. De Certeau understands disciplinary power to be continuously expanding and becoming more extensive, something which is seemingly corroborated by later theorists such as Bauman and Lyon. For de Certeau, one way of working against this disciplinary sprawl is to reterritorialize and resignify disciplinary spaces (1984, xiv). This process of radical or illicit reterritorialization is defined as tactical and operates in contradistinction to hegemonic societal strategies which take place in consensual and sanctioned frameworks. In the terms of de Certeau, strategy refers to "a place that can be circumscribed as proper (*propre*) and thus serves as the basis for generating relations with an exterior distinct from it" (1984, xix), while tactics delineate the appropriation of such a formally recognized, proper, institutional space.

The notion of a creative reterritorialization or resignification of space is particularly relevant within Post-Fordism, which, as we have seen from Rancière's theories on Consensus Democracy, disables political action through the enforced, strategic saturation of identities within society, something which prevents the political appearance of marginalized concepts or subjectivities. By reterritorializing space in an illicit and tactical manner, the myth of saturation, considered here as a strategy of Consensus Democracy, is refused and subverted, and the production of new cultural truth is potentially rendered possible. De Certeau's definition of strategy and tactics also resonates in illuminating ways with Castells' definition of the Network Society. We can understand hegemonic networks to be programmed to achieve certain "strategic aims," which might be productively subverted through illicit procedures of tactical reprogramming.

A second pertinent feature of Tactical Media in relation to Post-Fordism is that it evades definition and functions in a transient manner. As Alessandra Renzi notes, Tactical Media can take the form of DIY websites, social software, or organized

events (2008, 77). However, approaches to Tactical Media projects themselves are highly diverse and not easily categorized. Further, Tactical Media initiatives are themselves transient, fluid, and self-reflexive cultural forms. As Renzi states, projects tend to be diverse, centerless, and fleeting digital events (2008, 77). Tactical Media often also leaves little material trace of actions undertaken and rather relies on the memory and experience of those who experience interventions for lasting impact (Raley 2009, 13). As Garcia and Lovink state, Tactical Media projects are “never perfect, always in becoming, performative and pragmatic, involved in a continual process of questioning the premises of the channels they work with” (1997). Diverse in their content and approach, Tactical Media techniques cannot be seen as a homogenous movement within a network. Rather, as Alessandra Renzi states, they are “networked spaces – discursive spaces where resistance discourses and subjectivities are constantly produced and dropped once they become redundant” (2008, 76).

These characteristics of Tactical Media are also powerful defensive measures against the specific dynamic of power and control within Post-Fordism. In a societal power structure where visibility can lead to surveillance and policing, apolitical assimilation or disciplinary exclusion from the political field, the notion of being constantly in flux, shape-shifting and critically visible is a powerful and self-reflexive way to instantiate critique. The lack of homogenized identity which accompanies Tactical Media interventions also means it is characterized by a decentralized nature, another tactic appropriate to subverting contemporary power structures. As Garcia states: “practitioners of tactical media have studied the techniques by which the weak become stronger than their oppressors by becoming centreless, by moving fast across the physical and virtual landscapes. The hunted must discover ways to become the hunter” (Garcia et al. 2002). By remaining decentralized, transient, and undecidable, Tactical Media can evade being captured or depoliticized while carrying out interventions into hegemonic networks of power.

The decentralized nature of Tactical Media is also particularly effective in relation to the circulatory dynamic of power in Post-Fordism. As Tactical Media collective Critical Art Ensemble have argued, power has shifted away from physical architectural locations over the past 20 years and become situated in abstract, networked flows of information (1996, 7). To theorists such as Scott Lash, the abstract nature of informational power has also impacted on the way criticality functions, leading to “a politics of struggle around not accumulation but circulation” (2002, 112). However, as Critical Art Ensemble point out, it is difficult to locate this form of power, which, when faced with resistance, will simply move to another physical space as needed (1996, 13). Indeed, to Critical Art Ensemble, the efficacy of a critical gesture is often visible only in the response it garners for this reason. As the collective state: “certain indicators must be used to determine what is of value to power, or to find the (non) location of power. The assumption here is that key indicators of power-value are the extent to which a location or community is defended, and the extent to which trespassers are punished” (1996, 12).

Critical activity in the Information Society therefore becomes something of a game of cat and mouse, where critical gestures function in a manner similar to

guerrilla warfare, striking at a point in the system of Liquid Power where power is symbolically saturated at that moment. For Rita Raley, citing John Robb, this can be defined as the ‘*systempunkt*’: the area in the contemporary system of power which will “collapse the target system if it is destroyed” (2009, 11). Reading through the terms of Dean and Boltanski and Chiapello above, we can say that interventions which locate the *systempunkt* successfully contextualize transgressive acts, preventing unproblematic assimilation into the hegemonic workings of power and thus garnering a defensive societal response.

A subdivision of Tactical Media particularly pertinent to us here is Hacktivism. Hacktivism also developed in response to specific aspects of late Capitalism and represents an electronic version of forms of previous forms of civil disobedience (Jordan and Taylor 2004, 3). Hacking can be defined as a process of “modifying something beyond the predefined design field of original intentions and customization” (2006, 29) and thus also reflects the wider practice of Tactical Media as a creative resignification of space. In his book *A Hacker Manifesto* (2004), McKenzie Wark suggests that the hacker is a figure of central, but ambivalent, importance to Post-Fordism as an instantiation of Information Capitalism, understood here to revolve around the privatization and commodification of information and ideas along certain vectors by the ruling vectoralist class.

For Wark, the vectoralist class relies on the continuous modification or hacking of commodified concepts for Information Capitalism to function (2004, 037). To achieve this, hackers must find and commodify surplus meaning from seemingly saturated ideas and information. In Wark’s terms, this means acting to produce new meaning, rather than merely representing an already existing concept. Hackers must therefore performatively create new meaning from old, with commercial ends in mind. In this way, hacking is essential to the smooth functioning of hegemonic power. As Wark states: “to hack is to refuse representation, to make matters otherwise. . . . to trouble the object or the subject, by transforming in some way the very process of production by which objects and subjects come into being and recognize each other by their representations” (2004, 222). However, in Wark’s terms the hacker’s performative potentiality to produce new meaning also represents a unique capacity for effective counter-hegemonic action. This potential for performative criticality is defined in Wark’s terms as “Expressive Politics,” a form of criticality which seeks fundamentally “to permeate existing states with a new state of existence” (Wark 2004, 257).

The notion of producing a radical surplus from a seemingly saturated set of capitalist norms again mirrors the fundamental dynamic of tactics within Tactical Media as an illicit and subversive resignification of disciplinary space and reconfirms the imperative for reterritorializing the saturated system of hegemonically surveilled, policed, and monitored societal categories inherent in Rancière’s theories of Consensus Democracy. It also reflects the notion of subverting hegemonically programmed, consensual networks described by Manuel Castells. Nonetheless, it is important to note that this form of critical politics would not take the same form as traditional Rancièrean dissensus, where individuals appear from a position of invisibility onto the political stage. Rather, in the saturated flows of Information

Capitalism, Hacktivism produces new forms of political visibility through the redirection of flows and vectors of information. In line with Wark's argumentation, von Busch and Pálmas also reiterate the point that hacking is a distinctly performative mode of critique, tangibly altering what Rancière refers to as the Distribution of the Sensible. As they state: "to hack is to orchestrate... change, recreating meaning and performing new scenarios. It is dialogue: a negotiation with flows and vectors, maneuvering through turbulence and codified circuitry" (2006, 60).

To explore the workings of Tactical Media and Hacktivism in more detail, the next section of this chapter will explore three tactics which function to evade assimilation into dominant power, surveillance, or exclusion from the discursive field. These tactics operate within the auspices of counterpower described by Manuel Castells. As noted above, these formulations include blocking or reprogramming hegemonic digital communications networks and developing new networks of counterpower.

Tactic One: Blocking Information Flows to Hegemonic Networks

An established form of Hacktivist Tactical Media is the Distributed Denial of Service or "Ddos" attack. The traditional Ddos attack is a coordinated DIY operation, where large, distributed groups of individuals repeatedly reload web pages, overwhelming Internet servers with streams of targeted data so that websites either slow down radically or crash completely. As Sandor Vegh states, by blocking access to targeted websites and the information they hold, the Ddos attack constitutes a "brief critical intervention in the hegemonic status quo, 'owning' or 'rerouting' a symbolic gateway in the hegemonic establishment of a dominant power" (2003, 85–6).

One effective use of the Ddos attack is Electronic Disturbance Theater's project "Floodnet," a Java applet which improved the efficacy of Ddos attacks by functioning automatically to "reload a targeted web page several times per minute" (Stalbaum, n.d.). Floodnet was developed in 1998 to produce a series of strikes in support of Zapatista rebels in Chiapas, Mexico. After 40 men, women and children were killed by a paramilitary squad funded by the Mexican government and were not brought to justice in a legal process; Electronic Disturbance Theater launched a series of Floodnet attacks, targeted both toward the Mexican President's website and the Pentagon (Jordan and Taylor 2004, 72). Meanwhile later actions targeted wider anti-Zapatista organizations such as financial institutions in Mexico City (Vegh 2003, 76).

Floodnet also includes a second performance-based functioning where conceptual-artistic messages were delivered to targeted organizations, displayed as a server error log (Stalbaum, n.d.). Server error log messages within these protests variously named victims of the uprising or questioned human rights in Mexico. For instance, Floodnet might "ask President Zedillo's server or the Pentagon's web server 'Where is the human rights in your server?' The server then responds, human rights are not found on this server" (Dominguez in Fusco 1999a, 261). During a strike against the Mexican Government in 1998, a programmed

countermeasure was installed on the targeted website, causing Floodnet to crash. Similarly, in an attack on the Pentagon website in the same year, a Java applet developed by the US Government called “hostile applet” caused hacktivists’ computers to crash (Stalbaum, n.d.). Floodnet evolved to defend itself against these attacks. However, the fact that this form of attack garnered defensive responses from powerful targets suggests the Ddos attack is well positioned as an expressive hacktivist intervention in Information Society.

Ddos attacks have also been used more broadly by a range of other Hacktivist groups. For instance, the “Electrohippies” or “Ehippies” used Ddos attacks to target the World Trade Organization (WTO) in 1999 as part of wider anti-globalization protests. The virtual attacks here mirrored action on the streets of Seattle which aimed to block streets with physical bodies (Jordan and Taylor 2004, 75). This action was considered particularly effective in that it slowed the WTO conference networks and brought them to a halt on two occasions as a result of “450,000 people (or technically computers) participating over 5 days” (Jordan and Taylor 2004, 75).

More recently, Ddos attacks have been used by the decentralized activist group Anonymous: “a loose, leaderless, memberless and constantly shifting transnational collective of around ten thousand hacktivists” (Chadwick 2013, 107). In this context, Ddos has been used both as an act of solidarity and as an attack against capitalist organizations whose ideals or actions Anonymous refute. In December 2010, “Operation Avenge Assange” was launched by Anonops, a faction of Anonymous known as “one of the collective’s more militant and prolific nodes” (Coleman 2013, 3). As Gabriella Coleman states, this Ddos action was directed against financial institutions that had refused to process donations to WikiLeaks, including Paypal and Mastercard (2013, 3). These attacks cost Paypal a total of 3.5 million pounds and resulted in the sentencing of three members of Anonymous (Turner 2013). Anonymous have also launched Ddos attacks on the Church of Scientology, aiming to remove their websites from the Internet (Coleman 2013, 58) and launched an avalanche of Ddos attacks on pro-copyright organizations including the Motion Picture Association of America and the Recording Industry Association of America (Coleman 2013, 98).

Ddos attacks aim to collectively block information flows to important databases of information in the Network Society: undermining the functioning of hegemonic networks of information by preventing their visibility. By disrupting flows of information in this way, the Ddos attack is particularly appropriate to the functioning of contemporary power, which relies on the ability for information to flow and remains visible within and between hegemonic vectors and networks. In fact, as Jordan and Taylor state, by blocking such information, the Ddos attack is “almost willfully contrary to the nature of cyberspace” (2004, 73) and derives its power precisely from this fact. By functioning prohibitively to block the visibility of powerful information networks, the Ddos attack also operates to undermine the imperative for visibility within the total surveillance of Post-Fordism and the saturated classifications inherent in Consensus Democracy. These interventions also satisfy Dean’s call for uses of social media, which not only circulate but function with a political purpose (2008, 109), and create tangible disruption to the hegemonic

organizations they target, including substantial financial impact in the case of Anonops. Ddos attacks use the transience of Tactical Media to evade exclusion from the discursive field in the moment of their operation. However, as the examples above show, interventions do commonly garner a defensive response from hegemonic power, either through defensive counterattacks in the case of Floodnet or juridical proceedings in the case of Anonops. In this way, Ddos attacks constitute successful actions in the terms of Critical Art Ensemble above but also exemplify the fine line between exclusion and impact that Tactical Media interventions necessarily tread.

By actively reprogramming powerful networks with counter-hegemonic messages, Floodnet not only blocks but also reprograms networks in the manner of Wark's Expressive Politics. In Wark's terms, this means Floodnet successfully activates the potential surplus available in vectors of information through a hacktivist intervention. This mode of functioning, a form of digital détournement, can also be understood in Rancièrean terms as productively challenging the Distribution of the Sensible, by refusing the saturated networks of information which constitute Consensus Democracy and subverting them in ways which refute and problematize the smooth functioning of hegemonic ideology. In this way, as Dominguez argues, "the Floodnet gesture allows the social flow of command and control to be seen directly – the communities themselves can see the flow of power in a highly transparent manner" (Dominguez in Fusco 1999b).

Tactic Two: Hijacking and Reprogramming Powerful Networks

Another method within Tactical Media involves infiltrating and reprogramming powerful networks. One example of this form of intervention is the work of activist duo the "Yes Men." The Yes Men are known as Jacques Servin and Igor Vamos but use the names Andy Bichlbaum and Mike Bonanno in their work, alongside a host of other fictional identities. The Yes Men have been collaborating since 1996 and specialize in "Identity Correction" (Servin and Vamos 2004, 15), aiming to represent large capitalist corporations, political figures, and government entities more honestly than they represent themselves. Actions by the Yes Men tend to operate on several levels, including fake websites, guerrilla performances at conferences or on television, and feature-length films documenting and contextualizing interventions.

One example of the work of the Yes Men is the website [GATT.org](#). Like the abovementioned Ehippy Ddos attacks, this intervention was developed in 1999 in relation to anti-globalization protests in Seattle. [GATT.org](#) was a spoof version of the World Trade Organization (WTO) website, which replaced the positive organizational rhetoric of the WTO with satirical content, including articles carrying headlines such as "WTO Announces Formalized Slavery Market for Africa." In response to the website, the WTO published a press release stating it "deplored" the [GATT.org](#) site as something which created confusion and undermined the transparency of the WTO (Servin and Vamos 2004, 17). However, many organizations considered the site to be genuine, leading to Servin and Vamos being invited to speak as

representatives of the WTO at international conferences in Vienna and Finland, representing the WTO for a CNBC recording during the G8 summit in Genoa, speaking in front of 300 university students at the State University of New York at Plattsburgh and to the Certified Practicing Accountants Association of Australia in Sydney. Within these conferences, the Yes Men gave absurdist performance presentations under a variety of pseudonyms, ranging from advocating the buying of votes in Austria, to suggesting the administration of electric shocks to workers while wearing a gold leotard including a 3-ft phallic attachment, to announcing the disbandment of the WTO into an organization fighting for the rights of people over businesses in Australia. Despite many audiences failing to recognize or respond to conference presentations at the time of performance, these actions and other similar interventions are further contextualized and disseminated to a wider audience through two documentaries: *The Yes Men* (2003) and *The Yes Men Fix the World* (2009).

Another similar example of the work of the Yes Men can be seen in the 2004 website dowethics.com. This site targeted Dow Chemical, an organization which had assumed the assets of Union Carbide, the company responsible for an industrial gas leak in Bhopal, India, in 1984. As a result of the Bhopal incident, hundreds of thousands of people in Bhopal had been killed and suffered long-term health effects. However, Dow Chemical “rejected responsibility for the disaster and has made minimal efforts to compensate the thousands of victims” (Holmes 2007, 282). On the 20th anniversary of the Bhopal disaster, Servin and Vamos produced a false website for Dow Chemical, dowethics.com, and later received an invitation to speak on the Bhopal disaster from the British Broadcasting Corporation (BBC). Servin, acting as Dow Chemical Executive “Jude Finisterra,” appeared live on the BBC World News and suggested Dow Chemical would award a total of \$12 billion compensation to families affected by the tragedy (Vamos 2012, 318). According to a report by news channel CNN at the time, the hoax made a significant though temporary impact on Dow Chemical’s share price in Frankfurt “wiping \$2 billion off its market value” (Bindra and Paterson 2004) before the BBC issued an apology and on-air correction. The Bhopal intervention resulted in a negative press from the mainstream media, suggesting the action was a cruel hoax for the people of Bhopal. However, the Yes Men again responded to this with their own intervention. The pair travelled to Bhopal and interviewed families and organizations about the hoax, capturing sympathetic responses in the 2009 documentary *The Yes Men Fix the World*.

By producing false websites such as GATT.org and dowethics.com, the Yes Men gain illicit access to powerful communications networks and flows of information power within society, enacting a digital détournement of the programmed networks they infiltrate. By functioning in an illicit way to hijack powerful hegemonic networks, the Yes Men are also able to temporarily bypass the binary nature of inclusion which characterizes Network Power. In Wark’s terms, this sort of intervention might be understood as Expressive Politics, in that it actively disrupts the hegemonic, depoliticized ideologies within powerful organizations and brings new cultural narratives into public visibility on dominant vectors of information.

Interventions by the Yes Men thus refuse to accept the saturation of meaning within Consensus Democracy and employ Wark's notion of the hack to critical and self-reflexive ends, finding the surplus in received cultural narratives to reterritorialize the programmed narratives of targeted organizations.

The Yes Men avoid surveillance and exclusion from the networks they target by using visibility defensively: operating under pseudonyms and producing false websites to work like moles or viruses within the organizations they seek to subvert. Conversely, by uncovering and satirizing aspects of organizational functioning which are both unacceptable to the consensual spirit of New Capitalism and characteristic of its economic base, interventions cannot easily be reassimilated into hegemonic power. However, as mentioned above, interventions by the Yes Men have often gone unrecognized in the moment at conferences and events. For this reason, the production of documentary films recording and contextualizing events becomes essential. Having a secondary audience enables the Yes Men to further contextualize incendiary critical cultural material, answer back to critics in a way which prevents exclusion from the discursive field, and disseminate their work to wider audiences and networks.

Tactic Three: Critical Mapping as the Production of Networks of Counterpower

Finally, we will explore two Tactical Media projects which actually develop new networks of counterpower: Sukey and the Transborder Immigrant Tool. Sukey is a platform developed by two computer engineers Sam Gaus and Sam Carlisle during the 2011 G20 protests in London. This site aimed to prevent protestors being kettled by the police by providing real-time crowdsourced information on police movements and displaying this on a Google Map (Aitchison et al. 2011, 437). Sukey also included an SMS warning service and Twitter feed, as well as a location feature on GPS-enabled smartphones allowing protestors to see which roads were blocked, passable, or difficult to access via a color-coded system. Additionally, the site used encryption to ensure anonymity and included Ddos protection in case of site servers being targeted by authorities (Geere 2011).

Sukey can be understood as a crowdsourced network of counter-surveillance which turns the tables of police power and enables protestors to occupy the position of the hunter, rather than the hunted. This site forms a liquid network of counterpower in real time, using the nomadic nature of power in Information Society against itself. Sukey represents a form of Expressive Politics in Wark's terms in that it actually performs to produce a change in the fortunes of protestors and tangibly impacts the outcome of protests in this way. Similarly, in Dean's terms we can say that this intervention uses the capacity to be heard on digital networks as an action to elicit a response rather than merely contribute to circulating content (2008, 107). By using a Google Map, the application détourns and reterritorializes a hegemonic application, using this to activist ends. Meanwhile the use of anonymity here again helps temporarily avoid the threat of surveillance or reassimilation which comes with

an imperative for absolute visibility in Post-Fordism. Further, the defensive use of Ddos here means Sukey cannot easily be excluded from the discursive field.

A second example of critical mapping is the Transborder Immigrant Tool. This 2009 project was developed by Ricardo Dominguez and Brett Stalbaum of Electronic Disturbance Theater, who also developed the Floodnet project mentioned above. This project was developed from 2007 to 2010 as part of an Arts and Humanities Council Transborder Grant at the University of California at San Diego's b.a.n.g lab, where Dominguez was the Principal Investigator at the time and held tenure. The tool is a hacked GPS-installed mobile phone, which facilitates safe border crossing for Mexican immigrants to the USA by mapping water supplies left by organizations such as Border Angels, distances from highways, help centers, and local border controls. This was an urgent need given the dangerous route had claimed over 2000 lives between 1998 and 2004, numbers which showed no signs of decreasing in subsequent years (Dominguez et al. 2009, 2).

In order to produce the Transborder Immigrant Tool, Dominguez hacked and recoded aspects of the Motorola i455 mobile phone. The model was chosen for its simplicity and the fact that it was inexpensive to buy at around 40 dollars (Guertin 2012, 19). To make the tool accessible to different nationalities and literacy levels, linguistic features were also kept to a minimum on the hacked interface. As Caroline Guertin states, “the interface was designed to resemble a compass, and is more pictorial or iconic than textual. The tool is also a virtual divining rod, vibrating when it approaches water or safety beacons, and alerting the user when she nears a road” (2012, 19). The project uses an algorithm developed by Stalbaum himself as part of a previous digital project for hikers to enable new safer and more aesthetic trails to be marked for particular times, days, and hours (Amoore and Hall 2010, 305). The site also includes poetry and other images as a way of welcoming immigrants to the USA. According to Dominguez, phones were bought by the team and reprogrammed, before being handed out at the border and sold at a reduced price in local shops nearby.

Partially as a result of the Transborder Immigrant Tool, Dominguez and his team faced investigations by the University of California at San Diego (UCSD) and the FBI Office of Cybercrimes. However, to Dominguez, these layers of reverberation are considered part of a wider “performative matrix” associated with the project, which “activate and take a measure of the current conditions and intensities of power/s, communities, and their anxieties or resistances” (Electronic Disturbance Theater 2014). In this way, any reaction to the project adds meaningfully to the radical performance of the Transborder Immigrant Tool, evidencing its successful location of a systempunkt of contemporary power, which cannot easily be reassimilated into the workings of New Capitalism.

The Transborder Immigrant Tool can be understood as both a radical network of counterpower and an instance of spatial hacking, a way of “remaking maps to tell us what is actually going on in our proximity, but hidden from view” (von Busch and Palmås 2006, 33). The site operates performatively, producing a hack capable of functioning in accordance with Wark’s notion of Expressive Politics. A hegemonic vector of information is occupied here to new expressive ends, by subverting

hegemonic uses both of GPS and wider communications networks (Amoore and Hall 2010, 305). The imperative for visibility in Consensus Democracy is also refused by this tactical gesture, which develops a distributed covert system reliant on hegemonic communications networks. The efficacy of the gesture is a result of careful positioning and contextualization, which enables the project to act as a catalyst for real change in the lives of immigrants making the crossing to the USA while disrupting hegemonic strategies of border policing and simultaneously problematizing wider cultural narratives surrounding legality, immigration, and borders themselves.

Tactical Media, Transience, and Duration

In the above examples, Tactical Media projects perform temporary interventions to momentarily express new sets of possibilities. Projects tend to intercept and disrupt the smooth flows of information within Consensus Democracy and the Network Society by working within the logic of the network in acts of refusal and counterpower. In order to evade surveillance, reassimilation, or exclusion, projects tend to function in a decentralized way, becoming visible in carefully contextualized and timed moments, before disappearing from view. Through their tactical resignification and reterritorialization of strategic hegemonic power, Tactical Media and Hacktivism can be also understood as forms of digital détournement within contemporary capitalism. These cultural forms defend themselves against apolitical reassimilation within New Capitalism and work in an agile way to challenge liquid nomadic power within Information Society through transience and undecidability.

However, the transience of Tactical Media has also been referred to as a key weakness which prevents this cultural form from enacting lasting change within society. As Geert Lovink and Ned Rossiter suggest, the transience of Tactical Media means interventions often do not have the longevity to challenge capitalism in a robust way and therefore cannot be considered critically effective in the long term. As Lovink and Rossiter state: “disruptive as their actions may be, Tactical Media corroborate the temporal mode of Post-Fordist capital: short-termism... This is why Tactical Media are treated with a sort of benign tolerance....They point out the problem, and then run away” (2005).

As described in the above analysis of visibility within contemporary power, radical digital interventions that are visible in a durational way run the risk of surveillance, exclusion, or reassimilation. Given these issues with visibility, it is pertinent to question what a truly performative, critical and durational incarnation of Tactical Media might be. In relation to theories of Tactical Media, this question of duration can be related to the distinction between tactics and strategy as put forward by de Certeau, where strategy refers to “a place that can be circumscribed as proper (*propre*) and thus serves as the basis for generating relations with an exterior distinct from it” (1984, xix), while tactics delineate the appropriation of such a formally recognized, proper, institutional space. The production of a visible and durational

critical intervention will always run the risk of becoming proper. This would mean being reassimilated into the exponentially visible and vociferously audited realm of Consensus Democracy, in Rancière's terms, or falling prey to what Wark would view as representation rather than expression. In order for the durational radical intervention to successfully evade the threat of assimilation via strategy, it seems it must attempt to act tactically, perhaps by directly employing some of the tactics explored above.

To the Carbon Defense League, both short-term and durational tactics are at work in Tactical Media; considered here through the metaphor of the parasite, which hijacks the functioning of dominant power structures to its own ends (Martin 2003). For Carbon Defense League member Nathan Martin, this "parasitic media" can take two forms: the incidental and the generative. Incidental, momentary forms of parasitic media are said to take advantage of a "host's vulnerability to hijack" (Martin 2003). Meanwhile, in Martin's terms, durational "generative parasites must adapt and grow with their host system. This growth creates an allowance for greater sustainability of backdoors or hijacks" (Martin 2003).

One example of generative parasitic media worthy of note from a purely architectural point of view is WikiLeaks, a platform first launched in 2007 as a nonprofit news organization which remains operational today. During this time, often working in conjunction with the mainstream press, WikiLeaks has made a range of sensitive political information available, including perhaps most famously the 2010 "War Logs," documenting war crimes in Afghanistan, Iraq, and the USA's Guantanamo detention camp. Most recently, the site shocked left-leaning supporters by leaking 20,000 confidential e-mails from Hillary Clinton's campaign manager John Podesta during the 2016 US presidential election, a move which severely damaged the Democrat campaign and benefitted Republican candidate Donald Trump (Karpf 2017, 201).

WikiLeaks states that it does not seek stories but accepts and publishes reliable leaks which are offered to the organization (WikiLeaks 2017). On the website itself, the motivations of the initiative are documented as being based in the Declaration of Human Rights and, in particular, "the defense of freedom of speech and media publishing" (WikiLeaks 2017). However, WikiLeaks has always been highly controversial, with scandal surrounding both its operations and its leader Julian Assange. In light of recent leaks surrounding Clinton, the site's motivations and allegiances have been harshly questioned. As David Karpf states, the site has gone from being a "complex and controversial organization that broke major news stories in careful partnership with traditional news outlets... to be little more than the standard-bearer for Julian Assange and his long list of personal grudges and allegiances" (2017, 206).

Nonetheless as a durational, publicly visible intervention which can neither be assimilated nor excluded from power, the site remains a useful example to draw from. WikiLeaks borrows certain modes of functionality from Tactical Media but instantiates these in a durational manner. The site operates through strict anonymity of sources, which are verified through a highly encrypted electronic drop box (WikiLeaks 2017). Further, the platform is reliant on "dozens of servers dispersed

around the globe" (Allan 2013, 146), something which Leigh and Harding state has "made WikiLeaks virtually indestructible and thus beyond legal or cyber-attack from any one jurisdiction or source" (2011, 2). To protect innocent people cited within leaked information, stories displayed on this platform are reviewed and redacted by WikiLeaks employees. This is a feature which was first demanded by the Guardian, when working in collaboration with WikiLeaks to publish the War Logs, but is now central to the working of WikiLeaks as an organization (Allan 2013, 150). In many cases, readership of leaks is exponentially increased through collaboration with mainstream press, which brings stories into the mainstream. Through its tactical positioning, WikiLeaks has undeniably successfully targeted a systempunkt of contemporary power and has succeeded in disrupting and reterritorializing hegemonic networks in ways which cannot easily be reassimilated into dominant structures of power. As Slavoj Zizek states:

not only have we learned a lot about the illegal activities of the US and other great powers. Not only have the WikiLeaks revelations put secret services on the defensive and set in motion legislative acts to better control them. WikiLeaks has achieved much more: millions of ordinary people have become aware of the society in which they live. Something that until now we silently tolerated as unproblematic is rendered problematic. (2014)

WikiLeaks' success stems from a careful and self-reflexive mixture of tactical positioning, architectural structuration, and counter-hegemonic content. The specific combination of these elements enables WikiLeaks to evade the vicissitudes both of assimilation and exclusion which so often foreclose the potentiality of critical gestures in contemporary capitalism. The use of multiple servers between geographical locations makes WikiLeaks almost impossible to exclude from view or disable: a particularly effective tactic for critical, dissensual projects operating in the granular surveillance of Liquid Power and the binary system of Network Capitalism as described by Manuel Castells. Meanwhile, guaranteed anonymity for sources refuses the saturated visibility of Consensus Democracy while defensively retaining content present in leaked documents. Public disclosure of government secrets also resonates powerfully with Boltanski and Chiapello's assertions about the consensual spirit of New Capitalism. Disclosures on WikiLeaks which involve culturally unacceptable activity such as systematic torture and abuse are threatening for the progressive rhetoric within hegemonic power and difficult to unproblematically reassimilate into society's consensually accepted cultural norms. Further, by collaborating with mainstream press outlets, leaked content becomes visible on powerful communications channels, gaining credibility and expressively reprogramming hegemonic networks in this way. By locating itself in a space between exclusion and inclusion and carefully dodging the complexities of Network Power through its critical positioning, WikiLeaks is able to be durational, public, tactical, and critical. Unfortunately, however, the success of WikiLeaks' architecture does not guarantee the ethical integrity of its content, and its recent conduct demonstrates that effective critical tactics can be used for good or ill.

Conclusions

We have seen within this chapter some of the complex vicissitudes of power within Post-Fordism as described by a range of theorists and some of the tactics and techniques successfully levelled by digital activists within this context. Certainly, we can say that Post-Fordism is a battlefield where critical interventions need to be carefully framed in order to avoid being either assimilated into dominant culture or completely excluded from view. Tactical Media and Hacktivism are two ways in which self-reflexive critical gestures have been developed in society but demonstrate that even the most careful and rigorous framing cannot always guarantee success, at least in a durational way.

One thing which does become clear is that critical interventions need to function with tactical self-reflexivity in relation to society's operations at a given time and space. Indeed, this is something that future digital interventions might need to consider carefully, given the recent inauguration of Donald Trump, Brexit within the UK, and the rise of right-wing populism across the West. For many theorists, these political changes signal a crisis of liberal consensus and at least a partial shift in the operations of societal power. If New Capitalism is defined by a spirit of inclusivity, diversity, and consensus, populism aims much more directly to "build political hegemonies by exclusion" (Ochoa Espejo 2017, 96). As Ziya Öniş states, within populism "the language of hatred replaces the language of compromise and consensus. A monocultural vision of society replaces multiculturalism and leads to the celebration of the dominant culture in society at the expense of others" (2017, 22). Where apolitical assimilation of critical gestures was a key barrier to critical efficacy in previous forms of Post-Fordism, activists working today might face very different challenges. Within current populism, the economic base of society remains "insatiable and immoral," but the spirit of capitalism is no longer dominated by progressive rhetoric. Future activism will therefore need to find new tactical ways to refuse and rewrite the dominant spirit of populism while continuing to disrupt capitalism's economic base.

Cross-References

- ▶ [Affective Flux of Feminist Digital Collectives, or What Happened to the Women's March of 2017](#)
 - ▶ [Constitutive Surveillance and Social Media](#)
 - ▶ [Critical Internet Studies](#)
-

References

- Aitchison G et al (eds) (2011) *Fight back! A reader on the winter of protest*. Open Democracy, London
Allan S (2013) *Citizen witnessing: re-visioning journalism in times of crisis*. Polity, Cambridge

- Amoore L, Hall A (2010) Border theatre: on the arts of security and resistance. *Cult Geogr* 17(3):299–319
- Bauman Z, Lyon D (2013) Liquid surveillance. Polity, Cambridge
- Bindra S, Paterson C (2004) Bhopal hoax sends DOW stock down. [CNN.com](http://edition.cnn.com/2004/WORLD/europe/12/03/bhopal.hoax/). <http://edition.cnn.com/2004/WORLD/europe/12/03/bhopal.hoax/>. Accessed 8 Sept 2017
- Boltanski L, Chiapello E (2007) The new spirit of capitalism (trans: Elliott G). Verso, London
- Castells M (2007) Communication, power and counter-power in the network society. *Int J Commun* 1:238–266
- Castells M (2009) Communication power. Oxford University Press, Oxford
- Chadwick A (2013) The hybrid media system: politics and power. Oxford University Press, Oxford
- Coleman G (2013) Coding freedom: the ethics and aesthetics of hacking. Princeton University Press, Princeton
- Critical Art Ensemble (1996) Electronic civil disobedience and other unpopular ideas. Autonomedia and Critical Art Ensemble, New York
- De Certeau M (1984) The practice of everyday life. University of California Press, California/London
- Dean J (2008) Communicative capitalism: circulation and the foreclosure of politics. In: Bolder M (ed) Digital media and democracy: tactics in hard times. MIT Press, London Mass, pp 101–123
- Dean J (2009) Democracy and other neoliberal fantasies: communicative capitalism and left politics. Duke University Press, Durham
- Dominguez R et al (2009) The transborder immigrant tool: violence, solidarity and hope in post-nafta circuits of bodies electr(on)ic. Conference paper. Bonn. <http://bit.ly/1zkuYYP>. Accessed 8 Sept 2017
- Electronic Disturbance Theater (2014) Border art research: visible borders, invisible people, and the transborder immigrant tool. Center for Art and Media Karlsruhe. <http://bit.ly/1fVxtDq>. Accessed 8 Sept 2017
- Fisher E (2011) Media and new capitalism: the spirit of networks. Palgrave Macmillan, London
- Fusco C (ed) (1999a) Corpus delecti: performance art of the Americas. Routledge, New York
- Fusco C (ed) (1999b) Performance art in a digital age: a conversation with Ricardo Dominguez. www.thing.net/~rdom/nyu/PerformanceArt.doc. Accessed 8 Sept 2017
- Garcia D et al (2002) Defining tactical media. In: The virtual casebook project. http://www.nyu.edu/fas/projects/vcb/case_911_FLASHcontent.html. Accessed 8 Sept 2017
- Geere D (2011) Sukey apps help protesters avoid police kettles. In: Wired Online. <http://bit.ly/1HZpiAU>. Accessed 8 Sept 2017
- Guertin C (2012) Mobile bodies, zones of attention and tactical media interventions. In: Hug T, Sutzl W (eds) Activist media and biopolitics: critical media interventions in the age of biopower. Innsbruck University Press, Innsbruck, pp 17–29
- Holmes B (2007) Do it yourself geopolitics: cartographies of art in the world. In: Sholette G, Stimson B (eds) Collectivism after modernism: the art of social imagination after 1945. University of Minnesota Press, Minneapolis, pp 273–295
- Jordan T, Taylor P (2004) Hacktivism and cyberwar: rebels with a cause? Routledge, New York
- Karpf D (2017) Digital politics after trump. *Ann Int Commun Assoc* 41(2):198–207
- Lash S (2002) Critique of information. Sage, London/California/New Delhi
- Leigh D, Harding L (2011) WikiLeaks: inside Julian Assange's war on secrecy. Guardian Books, London
- Lovink G, Garcia D (1997) The tactical media manifesto. Netttime. <http://bit.ly/1MBQ1Fu>. Accessed 8 Sept 2017
- Lovink G, Rossiter N (2005) Dawn of the organized networks. *FibreCult J* (5). <http://bit.ly/1IwUAGj>. Accessed 8 Sept 2017
- Lyon D (2010) Liquid surveillance: the contribution of Zygmunt Bauman to surveillance studies. *Int Political Sociol* 4(4):325–338
- Martin N (2003) Parasitic media: invisibility and other forms of tactical augmentation. Subsol. <https://bit.ly/2fXN1O1>. Accessed 8 Sept 2017
- Ochoa Espejo P (2017) Populism and the people. *Theory Event* 20(1):92–99
- Öniş Z (2017) The age of anxiety: the crisis of liberal democracy in a post-hegemonic global order. *Int Spectator* 52(3):18–35

- Plant S (1992) *The most radical gesture: the situationist international in a postmodern age.* Routledge, London
- Raley R (2009) *Tactical media*. University of Minnesota Press, Minneapolis
- Rancière J (1999) *Disagreement: politics and philosophy* (trans: Rose J). University of Minnesota Press, Minneapolis
- Rancière J, Panagia D (2000) Dissenting words: a conversation with Jacques Rancière. *Diacritics* 30(2):113–126
- Renzi A (2008) The space of tactical media. In: Bolder M (ed) *Digital media and democracy: tactics in hard times*. MIT Press, London, pp 71–101
- Sennett R (2006) *The culture of the new capitalism*. Yale University Press, New Haven/London
- Servin J, Vamos I (2004) *The yes men: the true story of the end of the world trade organization. Disinformation*, New York
- Stalbaum B (n.d.) The Zapatista tactical Floodnet. Thing.net. <http://bit.ly/1KfR5RR>. Accessed 8 Sept 2017
- Turner L (2013) Anonymous hackers jailed for Ddos attacks on Visa, Mastercard and Paypal. Independent Online. <http://bit.ly/1QLulvk>. Accessed 8 Sept 2017
- Vamos I (2012) DOW chemical apologizes for Bhopal. In: Boyd A, Oswald Mitchell D (eds) *Beautiful trouble: a toolbox for revolution*. OR Books, New York, pp 381–382
- Vegh S (2003) Classifying forms of online action: the case of cyberprotests against the world bank. In: McCaughey M, Ayers MD (eds) *Cyberactivism: online activism in theory and practice*. Routledge, New York, pp 71–97
- Von Busch O, Palmås K (2006) *Abstract hacktivism: the making of a hacker culture*. Open Mute, London
- Wark M (2004) *A hacker manifesto*. Harvard University Press, Cambridge, MA
- Weber M (1905) *The protestant ethic and the spirit of capitalism*. Unwin Hyman, London/Boston
- WikiLeaks (2017) About. <https://WikiLeaks.org/About.html>. Accessed 8 Sept 2017
- Zizek S (2014) How WikiLeaks opened our eyes to the illusion of freedom. *Guardian Online*. <http://bit.ly/1oJlbpa>. Accessed 8 Sept 2017



Historical Web as a Tool for Analyzing Social Change

27

Ralph Schroeder, Niels Brügger, and Josh Cowls

Contents

Introduction	490
How, Why, and By Whom Is the Web Archived?	492
Selecting Archives for Analysis	492
Accessing and Analyzing Archives	495
Major Findings	496
Counting	497
The Use of “Web Spheres”	497
Analyzing Web-Specific Phenomena	498
Exploring “Old Media” Online	499
Analyzing an Entire National Web Domain	500
Outlook	501
References	503

Abstract

This chapter discusses how the World Wide Web can be used as a resource for historians and social scientists. The web has existed for more than two decades and been used for many purposes, including as a source of information, entertainment, and much else. It has become an indispensable part of our daily lives. Future historians and social scientists are therefore bound to look to the web, its

R. Schroeder (✉)

Oxford Internet Institute, University of Oxford, Oxford, UK

e-mail: ralph.schroeder@oii.ox.ac.uk

N. Brügger

Aarhus University, Aarhus C, Denmark

e-mail: nb@cc.au.dk

J. Cowls

The Alan Turing Institute, London, UK

e-mail: josh.cowls@gmail.com

content, and structure, to understand how society was changing – just as they have used various records such as letters, novels, newspapers, radio, television, and other artifacts as a record of the past for the pre-digital era. This chapter explores how scholars can make use of the archived web as a source for understanding historical patterns of culture and society, including the challenges they face in doing so.

Keywords

Web · Archive · History · Digital humanities

Introduction

The World Wide Web has now been with us for more than 20 years. From its early incarnation as the Mosaic browser to today's ubiquitous uses of the web as a source of information, entertainment, and much else, the web has become part of our daily lives. Future historians and social scientists are bound to look to the web, its content, and structure, to understand how society was changing – just as they have used letters, novels, newspapers, radio, television, and other artifacts as a record of the past in pre-digital times. This chapter serves to highlight that, with 20 years of material to draw on, the opportunity to use the web for understanding social change is already upon us. This chapter thus aims to explore the ways in which scholars can make use of the archived web as a source for understanding historical patterns of culture and society.

There is a growing body of research about how the web can be used to understand social and cultural change. So far, however, this research has consisted of two broad strands: The first consists of studies examining the methodological challenges of this task (see Brügger 2005, 2012a, 2013) and the second of substantive studies. The latter take the form of analyzing specific sets of data about the web, either in the form of data about web links and other “big data” (quantitative research) or about particular sets of web pages (qualitative research). In this essay, rather than examining these in detail, we take a step back to ask: What can the web tell us about society?

To do this, we can think of the web as an archive or a record. But here we immediately face a problem: archives are normally thought of as scholarly sources such as documents or newspaper archives, where there are established practices whereby these are obtained, preserved, and utilized as scholarly sources. In the case of the web, it is still unclear how this source can and should be preserved and for what purpose? Or again, in the case of established archives, there are large institutions dedicated to their preservation. In the case of the web, we have some emerging institutions, such as the Internet Archive and national web archives but also many scholars and others who are creating their own archives and putting them online.

Another way to highlight the problem that there are as yet few established ways to think about the web as a source for scholarship is in terms of the “macro-” versus “micro-” problem: what we have, on the one hand, is the whole of the web (insofar as

it can be captured; that is, excluding the “dark web” and other parts that cannot be captured (Ainsworth et al. 2011)), and on the other, we have particular subsets of pages or parts of pages that illuminate only certain aspects of the web. This problem is similar to the macro-/micro-problem in the social sciences generally. Yet for the relatively well-circumscribed phenomenon of the web, this problem also seems to admit of a straightforward resolution: there are only so many “web spheres” (Foot and Schneider 2006, p. 20) that make up the totality of the web, and so the division of the web into the web as a whole – its national and linguistic and domain-name-defined subdomains and its network – organized and hierarchically defined pages – gives this phenomenon a well-defined and observable topology. Currently, however, the macro-/micro-divide seems vexing because, as a researcher, one will typically start with particular topic or question, which makes it difficult to establish at the outset: How much of the web needs to be taken into consideration to illuminate this topic or question? This abstract problem is compounded by the fact that the way that such efforts often start is by searching for a few pages in an archive, which, in the case of the web, produces too many results.

Understanding the changing contours of the web – how it has grown and changed in size and shape, how pages link to each other, and how its content has changed – can give us clues about what kind of online information has been produced and what this says about society’s changing needs for information. The content of the web can also tell us about changing patterns in society as a medium just like other media: so, for example, what does the changing shape of online newspapers or of the BBC’s website tell us about what society regards as newsworthy (Cowls and Bright 2017)? Or it is possible to look at the evolution of the whole of the UK webspace, the .uk domain (Hale et al. 2014). The issue of what “the whole” tells us in the case of the web is common to big data studies generally. For all of these studies, there needs to be a clear relation between the (whole) object and how it relates to society. In the case of the web, there are as yet few studies which tackle the web as a single entity. An interesting question that can be asked here is how, in terms of which populations where in the world look at which parts of the web, the web can be seen as an interconnected whole. One surprising finding here is that while it might be thought that China, with its Great Firewall, is more isolated from the world than other parts of the world or countries, in fact, it turns out that China is no more nor less isolated than other parts of the world, such as the United States (Taneja and Wu 2014).

The use of web archives is bound to be exploratory in its early phase, partly because the methods are not yet well-established but partly also because it is not known how this source should be used to understand social and cultural patterns. In a sense, this is true of all new records: for example, how should television be treated as an archival source, as opposed to personal letters which had been used for far longer? Similarly, sound and image are far behind text in terms of being used as a source for understanding social and historical change, and yet sound and image are increasingly prominent in the online world which used to be dominated by text. The obvious solution to the question of what part of the web to examine, the whole or particular parts, is to use a combination of methods and sources to obtain a well-rounded

answer to a particular question and, put differently, to combine quantitative and qualitative data and methods to see how parts of the web fit into the whole and what these parts can tell us. But this is easier said than done, since it is also not clear what the web, as opposed to traditional records, can tell us about social and historical change since it is changing so quickly.

A further constraint is that humanities and other scholars are at the mercy of the private sector with sources like Google Books or YouTube and how they provide access to and organize data. Otherwise, scholars are reliant upon the Internet Archive or other efforts at archiving and preservation. Yet these efforts by noncommercial or public institutions are still at an early stage. Humanities scholars and other academics as well as library and archiving professionals criticize digital resources and the archived web as being a poor source with many problems. At the same time, this area is being driven forward by many forces outside of academia and research, as when, for example, companies need to develop and use private web archives in case they are called upon in legal disputes. It is also not clear how taken-for-granted web archives are: in some cases, it might seem that digital materials could never replace paper and other offline sources; on the other hand, it is difficult to see how someone analyzing social and historical change in a hundred years' time would start – and often end – with anything but online materials.

How, Why, and By Whom Is the Web Archived?

Having sketched a number of questions arising from the emergence of web archives, we can now delve into these in more detail. First, it can be mentioned that the notion of an all-encompassing web archive patiently waiting to be analyzed is based on a number of assumptions, which deserve to be made explicit: Just as classicists must work with a limited and fragmented set of sources for divining the lessons of antiquity, web archive researchers must deal with myriad challenges; web archives are often incomplete, messy, and usually either narrow or shallow in scope. Yet one obvious difference with the study of antiquity is that web archives continue to grow, every day. Decisions made about archiving today therefore affect the quality of analysis that both present and future scholars are able to conduct. Hence this section will offer an overview of how different web archiving strategies can meet a variety of scholarly needs.

Selecting Archives for Analysis

The first challenge is to find the old web material to study. The good news is that today more of the web is preserved than ever; the bad news is that the number of existing web collections continues to grow, adding to the difficulty of getting an overview of what is available and finding exactly what one is looking for. Moreover, not only the means but also the motivations underlying the preservation of the web should be borne in mind by prospective researchers.

Archiving the internet itself has been a haphazard enterprise. Since 1996 a number of national and international web archiving initiatives have emerged (for a more detailed overview, see Brügger 2011, pp. 29–32). These can be placed on a continuum ranging from macro-level archiving (web archives made by professional cultural heritage institutions) to microlevel archiving (archives made by individuals or groups with no or only limited web archiving skills and archiving for personal use) (Brügger 2005, pp. 9–13). Thus at the one end of the continuum, we have a web archive such as the Internet Archive which is US-based but intends to archive “the web” in toto. Rosenzweig (2003) has pointed out how odd it is that it has been down to a single individual, Brewster Kahle, who founded the Internet Archive, to preserve our digital heritage, and the Internet Archive is still the only web archive that is trying to be completely comprehensive (There are lists of archives at <http://www.netpreserve.org/resources/member-archives> and https://en.wikipedia.org/wiki/List_of_Web_archiving_initiatives). Nonetheless, at this level, there are also national web archives with the remit of preserving national web domains.

In the middle of the continuum, we have, first, commercial vendors who offer professional web archiving solutions, but the users of the service are themselves responsible for the curation and selection of what to archive (e.g., Archive-It), and, second, publicly available collections, archived by “amateurs,” with no cultural heritage obligations (e.g., The Archive Team Geocities Snapshot, or Common Crawl’s open repository of web crawl data).

Finally, at the micro end of the continuum, there are scholars who archive the web for a specific research project, companies who keep their web for legal reasons, and individuals or groups who simply want to preserve a portion of the web for whatever purpose. A study by Lindley et al. (2013) interviewed people, selected on the basis of being sophisticated users of digital technologies, about their personal archiving habits. One might expect in this case that people are starting to put their online materials together in the manner that they keep diaries, photo albums, and other collections of mementos. What Lindley et al. found was more complex. First, people archived their materials as part of a wider information management process, including the content on their social media sites, and their archiving was thus spread across a number of platforms. Second, the process of archiving was not an individual pursuit. Rather people would, for example, rely on friends or family members to be able to keep a record of certain events. Third, much of the content is not archived or backed up since it is thought (often no doubt mistakenly) that it can be easily found again by searching through one’s file systems. Further, much material, for example, photos on a photo sharing site that are no longer used, is simply abandoned or discarded as not being worthwhile. Fourth, people regarded different sites or platforms as different facets of themselves, without a need for integration.

Hence, while one might expect people to be worried about keeping their personal materials in an online storage system or controlled by others, in fact, they used diverse methods, abandoning certain sites and keeping their records in collaboration with others in their networks. What we can see here is that the practices of curating one’s personal life online as a means of keeping a record has not yet settled down into a consistent and well-organized practice, and perhaps it never will. In this sense,

it mirrors the early uncertainties of professional and academic archiving practices. Further, these individual-level archives also mirror the efforts of other entities – institutions like firms or nongovernmental organizations or governments – to keep records or institutional memories of themselves, which are also in a state of flux.

This flux also applies to the wider web which is being preserved – or not – in many currently ad hoc ways which have not yet settled into well-established practices and institutions. Consider here, for example, what could be termed the world “wild” web: that is, old material still available online. In this case, the web itself functions as a repository of the web of the past, either because individuals or groups have deliberately put old web material online (their own web productions or those of others, e.g., Berners-Lee’s first webpage) or because the original owners of a website or a web page have simply forgotten the material and left it unchanged.

A final consideration when selecting which archive to use for analysis is the original audience for a given website or collection thereof. Brügger (2012a, 2013) has shown that one way to assess the influence of a given website is analysis of the number of visitors overall and/or the number internet users in countries in which the website is most salient (p. 318). Beyond aggregate ranking sites such as Alexa (<http://www.alexa.com/>), little is publicly known about who uses the web in general, though Waller (2011) has examined information seeking by Australians, and Segev and Ahituv (2010) provide a more global perspective. More recently still, Wu and Taneja (2016) have gauged attention to the world’s top websites, grouping them by format and genres and their popularity.

Another perspective on understanding web archives is to draw parallels with archives of other media. Ankerson (2010), for example, discusses what is and is not preserved in the case of television archives such as the BBC: What is preserved in the archive are programs that are highly valued – such as documentaries – and what is left out are popular entertainment programs. Similarly with the web, events that are deemed to be of public interest are preserved and cute kittens are not. In the case of television, there may also be some documentary evidence about the context of archived material which may not be available for web archives: here Ankerson’s examples are early websites using Flash software, which were often pioneering in graphical design and highly popular. The early Flash-based websites are now either gone or only viewable in an impoverished way since the software is no longer supported. In this case, it is possible to recover some of the context of these websites by examining the software documentation or conferences of developers and website designers, but this context will, as in the history of TV programs, only be preserved in a patchy way. Other cases that Ankerson points to – Geocities (an early very popular online community) only being saved by nonprofessional archivists or Friendster, an early social networking site, which disappeared – highlight how uneven the record of preservation is becoming.

Thus, the scholar who will study the web of the past is confronted with myriad collections of the ancient web, which differ in terms of the purpose for which they were archived, the archiving strategy used, the level of professionalism with which they were archived, and different approaches to making the material accessible. The

diverse and often idiosyncratic ways in which the web has been preserved, and the challenge this creates for access, also point to other difficulties with actually using the ancient web for research, which we turn to next.

Accessing and Analyzing Archives

Once the scholar has found the web material he or she was looking for, the next challenge is how to approach the material, because accessing archived web material is both fundamentally different to the experience of using the live web and dependent on how it has been archived, stored, and made accessible. Let's have a closer look at these two.

In most cases, the process of archiving itself changes what is archived, thus creating something that is not necessarily identical to what was once online, including different versions and formats (for the reasons for this and details of these differences, see Brügger 2005). Therefore, archived material is best understood as a unique version of the original material and not simply a copy of what was once online. In addition, the archived web is often incomplete, as well as too complete (something is missing, but there also exist too many “identical” versions); documentation is often lacking; and archives tend to be inconsistent in terms of time and space, compared to the online web, since not all elements are archived simultaneously and with the same intervals and because not every website has necessarily been archived in its totality.

These general characteristics of the preserved web arrive in different configurations, depending on the archive being used. Ultimately, the ways in which each web collection has been collected, preserved, and made accessible determine how it can be used for scholarly purposes, and therefore each web collection opens up its own array of possible ways of interacting analytically with the material. A couple of examples can illustrate this. Firstly, regarding collection: if a web archivist has decided only to archive a limited number of web sites once a year, it will not then be possible to analyze all the websites within a given national web domain; or, if only the front pages of websites have been archived, an analysis of all the underlying web pages is made impossible. Second, regarding preservation, if only the files with the archived web are preserved (usually in the WARC format), this may make the analytical use of the web archive more complicated since these files have to be opened to find the relevant material, whereas if indexes of what can be found in the WARC files are also preserved (as “metadata”), this allows for a much easier analytical approach. Third, regarding access, scholarly access can depend on legal as well as technical issues. The legal issue is a question of whether the web collection is open for everyone, only open for researchers (online or on-site), or totally closed.

Once the researcher has access to the archive, free text search is available in some cases, whereas in others one has to know the exact web address for what one wants to study – this distinction determines how the web collection can be used. The interface as the gateway to the web collection also plays a role: for instance, if the material is

only made available via the Wayback Machine, where only individual web pages are shown, then “big data” analyses of hyperlink networks studies of thousands of web elements or websites are not very likely to be performed using this interface. Finally, it can be very important for a scholarly use of the archived web that the web archive allows for delimiting and exporting a subset of the archive.

Ultimately, how best to use web archives still remains to be worked out, and this complicates understanding of their utility for research. To begin with, van den Heuvel (2010) discusses the Internet Archive Wayback Machine as a source of learning about the web. Yet he also notes that this was not the first attempt to create a common stock of universally accessible knowledge. The pioneering efforts were not only those of the Memex of Vannevar Bush and even earlier and more importantly those of the Belgian Paul Otlet, who proposed a means of accessing all the world’s documents, including in various multimedia formats. Otlet saw this as a way of universalizing scientific expertise – which we might compare, for instance, with the crowdsourced information of today’s Wikipedia. His vision, like Bush’s, was that this type of collaboration around knowledge was a way to further a better society, which again points to Wikipedia and various Internet archives in the future.

Newer archives have emerged in an ad hoc fashion. Rosenzweig (2003) has noted that historians have been slow to engage with web archives and digital heritage sources, regarding these as technical matters, even though the divide between archivists and historians due to increasing specialization is a relatively recent phenomenon. It can also be noted, as Brügger (2012b) does (p. 324), that historians may not be best placed to archive the web since they will likely not be familiar with the various challenges involved in this process. He suggests that professionals are better equipped to do this. Discussions of the various difficulties associated with using the web as a source for studying the past in general and the history of the web in particular have been had in greater depth elsewhere (Brügger 2012a, 2013). Instead of discussing these difficulties further here, we now turn to offer an overview of the major findings that have been made using web archives, with a focus on the solutions that researchers have employed.

Major Findings

Having reviewed some of the main challenges, the chapter can now turn to review some of the main substantive findings of research conducted by using extant (or in some cases now extinct) web archives. It will be useful to present wide array of findings since a systematic review is beyond the scope of an essay. In doing this, we can highlight the diversity of studies that it is possible to conduct through web archive analysis while also emphasizing the technical challenges which have impaired research. Among the topics and issues covered in this section are how to delimit national webs and other units of analysis in view of the fact that the websites relating to a single country, for example, are not restricted to a single national web sphere or domain. Other substantive research areas covered here include charting the evolution of news items, social movements, and fan cultures online.

Counting

In some cases, the best way to get a sense of what an archive contains, and what it can tell us about the web – and perhaps society more generally – is to count references to relevant words and phrases. Milligan (2013) has demonstrated the strengths and weaknesses of word frequencies as an approach to understanding the web as a resource for understanding historical change. He examined the Canada Digital Collections site which contains 73,000 files. One approach that he took as part of this project was to make a word cloud of this site which showed, for example, that the importance of certain place-names relative to others did not correspond with the size of the populations of places. Another finding that emerged from this word cloud was that “certain kinds of history dominate: communities, family names, the built form (houses, churches, schools, and so forth)”(p. 45). Put differently, the labels used on digital heritage sites shape the kinds of things that are thought to be worth preserving online.

However, another takeaway from Milligan’s work is that raw counts of words give numbers which make it necessary to know the context. An example he uses is the prominence of “Louisbourg,” which is both the name of a town and a fortress, which is now a famous historical site. A different example where context is necessary is whether “school” refers to a building or the educational experience. Still, once a collection has been indexed allowing for keyword search, it is possible to examine certain topics in depth and also to build smaller collections. As can be seen here, the archived web as “raw text,” or rather as text which has been filtered so that significant places, events, and names stand out, is a source which showcases the web as a particular way of understanding history – as names (of physical sites) found in a collection (of digital sites). This way of understanding history has a number of analogues in the understanding of cultural patterns, such as counting word frequencies in texts (Aiden and Michel 2013).

The Use of “Web Spheres”

One way to archive particular niche topics from web archives is to trace the history of particular collections of websites. In an early discussion of web archiving, Foot and Schneider defined a “web sphere” as “web sites deemed relevant or related to a theme or object,” in other words, as a single entity, which they first used (2006, p. 20) in relation to the American election campaign in 2000.

Havalais (2010) did this for the four top (as measured by Alexa) white supremacist sites from the United States, such as the sites of the Stormfront and White Aryan Resistance groups. Among the insights that can be gained from such an approach is to chart how these extremist sites link to related sites, for example, those of like-minded academics which are linked to in order to gain credibility (these organizations link more to academics’ sites than academic sites link to them). Havalais also points out that the United States is unique in allowing such extremist views to be expressed online, as opposed to Europe where hate speech of this kind is forbidden. Analyzing

the history of these sites allows him to weigh, for example, whether freedom of speech serves to promote or to isolate this type of thinking.

Jesiek and Hunsinger (2010) take a single event as their point of departure, in this case the shooting at Virginia Tech University in 2007 which killed 32 people. Developing an archive about this kind of event with contributions from the public partly serves to create shared memories. A dedicated memorial website also nowadays competes with other ways of sharing of memories, such as via Facebook, Wikis, blogs, and the like. Further, a website commemorating an event like this raises the question of who should undertake this type of effort – in this case, volunteer academics, but this role could equally be carried out by various institutions and groups – and of what should be included and excluded.

A different way to shed light on history by means of the web is to trace the evolution of a single website and its creator and content. Hofheinz (2010) has done this by examining allah.com using the Internet Archive. This site was one of the first Islamic websites (it started in 1995) and was created by an Egyptian-born software engineer who moved to the United States. The site provided the text of the Koran and other Islam-related materials for more than a decade, and it tried to promote a particular view of Islamic scholarship. This view can be charted as it adapted to competition with other sites' views and also adapted to major events such as the 9/11 terrorist attacks. What this approach can show, among other things, is how the representation of Islam differs as between an individual's views and those, say, of Islamic clerics. Further, Hofheinz argues that even though the site never gained a large following, and even if this kind of challenge is not just a product of technology, it also demonstrates that lay or rival interpretations of the scholarly tradition are themselves part of modern Islam.

Analyzing Web-Specific Phenomena

Many uses of the web are unique to the medium. Particular types of content, such as live personal video, have made for interesting case studies. Making one's private life and remote places available via webcams around the clock and in real time began in 1993 with an academic project at Cambridge University showed the goings-on around a coffee-machine that could be accessed via the internet. Apart from this place-sharing use of the web, the first "lifecasting" webcam that became famous was Jennicam, started by an American student in the late 1990s. Hillis (2010) documents how a number of gay men adopted lifecasting, partly in order to counter homophobia. Even though these sites proliferated in the early 2000s, they have since declined. What we can see here are the origins of particular kind of web content that has since become so commonplace that it no longer seems special. Another issue that this kind of content raises is where to draw the line around phenomena that are of wider interest: this applies to gay lifecasting just as it does to lifecasting and live place-oriented webcams generally.

A different way to consider lifecasting is through the lens of authenticity. With the proliferation of YouTube videos purporting to show scenes from real lives, Szope

(2010) discusses how these videos shed light on online celebrity. Here we can think of cases, highlighted by Szope, where the rise of ordinary people to stardom has been contested because it turns out to have been orchestrated. One reason that Szope's and Hillis' examples are interesting is because they also raise (though not in these terms) the question of the audience or of viewers of these sites: What is the role of the audience that is interested in this kind of web content, as opposed to the question that is more often asked, which is about the narcissism of those who put themselves on display in this way.

Ankerson (2010) takes a different approach, tracing the history of the web through the aesthetics of web design. The history of art and design is of course another lens through which the web could illuminate sociocultural change. Web design is simultaneously a history of the people and organizations, the freelancers and the small firms, or in-house operations of larger media firms, which produced most websites over the course of the web's history. Commercial websites were quite plain at first, mostly text against plain backgrounds, and to a large extent reproduced what had gone before, viz., advertising brochures. Over time, and especially during the internet boom of the late 1990s and early 2000s, website design became much more aesthetically pleasing and filled with multimedia content. Flash software became widespread in web design, and web designers were seen as artists. What Ankerson shows is that the look of the web was not given from the start; it was shaped by the warp and weft of the internet economy and how it impacted website makers.

Engholm (2010) examines archival curation of the web from another perspective: that of the curator of the Danish museum of web design. There are various options for creating a collection, for example, having timelines and exhibitions focusing on particular topics or allowing the visitor to create their own collection. The possibility of drawing on national archives, as in the Danish case of the Netarkivet, was not possible for copyright reasons (questions of copyright are prominent in using the web as a social science resource). Hence the need to adopt a "micro archiving" strategy in this case; selecting certain content. Yet there are also advantages compared to an offline museum, such as that visitors can access the museum from home. On the side of disadvantages again, however, there is the question of what level of internet expertise and what kind of equipment the online museum can assume among its visitors? Interestingly, the timeline of the Danish museum echoes Ankerson's account of various periods associated with the emergence of web design, including the designers moving increasingly into the foreground as "stars" in the late 1990s and the effect of the dot.com crash in the early 2000s.

Exploring "Old Media" Online

For all the innovations in content and use that the web enables, another challenge for scholars of web archives has been to explore how existing, pre-Internet media organizations are represented on the web. Lindblom (2010) discusses how different Finnish media organizations went online and how they needed to adopt different

paths depending on how closely the web presence of news organizations (TV, newspapers) was integrated or kept separate from their other types of media. The case study of Finland highlights that the web as a commercial venture has found distinctive niches (like the website developers also discussed by Ankerson) and become part of media firms with existing models of how media should be successful, which may or may not work for the web as a whole.

Along similar lines, Thoreson charts the evolution of another news organization, the BBC. The BBC's website went through several key stages and events which increased the popularity of the site, especially in terms of user interaction. These include the death of Lady Diana Spencer in 1997, which received a response of thousands of emails that were published on the site. Or again, the Indian Ocean tsunami of 2004 and UK election of 2005 and the London bombings in the same year generated a large amount of user contributions of material. Finally, the launch of the iPlayer in 2007/2008 allowed streaming and downloads of programs, a different type of interaction again. These and other events and innovations have made the BBC into one of the most popular news and entertainment websites not just in the UK but also globally.

In terms of how the history of newspapers is archived, Falkenberg (2010) notes that there are, in principle, two approaches: one is to see online versions as a new departure within the existing newspaper industry, and the other is to begin with online-only newspapers. The first looks backwards from how online newspapers have affected traditional newspapers; the other looks forward in charting the course of a new phenomenon. There has also been traffic between the two, for example, in how the layout of online newspapers has affected the visual appearance of print newspapers – and not just the other way around. In Denmark, Falkenberg says, online newspapers have reached the point of being equal in power to traditional newspapers, and both compete online only with public service news providers and with a few new niche newspapers.

Jessen (2010) points to a difficulty in research on web advertising, which is how to select the objects of study. She does this by examining a broad range of content (computing, tourism, and the like) which has had wide reach. By comparing hundreds of Danish sites across two periods in the 2000s, she can notice a number of shifts. One example is the shift toward greater interactivity, which means that the viewer is invited to do things differently (in this case, navigate) over the course of time.

Analyzing an Entire National Web Domain

A recent research initiative with an unusually wide scope was the Big UK Domain Data for the Arts and Humanities (BUDDAH) project, led by the British Library, the Institute for Historical Research at the University of London, and the Oxford Internet Institute at the University of Oxford. The project provided funding for ten scholars with expertise in a range of arts and humanities fields, who had little or no prior experience using web archives for research. The researchers were given access to

a 65 terabyte dataset containing crawls of the .uk domain from 1996 to 2013 and a search interface and trend analysis tool to explore the data.

The ten projects yielded valuable substantive findings in diverse areas of research, which ranged from the UK's online military presence to poetry networks (Cowls 2017). Just as significantly, the project offered fresh perspectives on how web archives might be integrated into mainstream research agendas. For instance, the ways in which the researchers approached the archive's search interface illuminated the wider practice of navigating web archives: the scholars had to abandon their pre-existing "Google mindset" when using the archive search engine, which listed results only by date, rather than relevance, as mainstream search engines typically do by default. While daunting, given the size of the archive and the volume of results which were returned, many researchers found this intellectually liberating, since it allowed them to apply their own expert perspectives on a given subject without the curatorial role played by invisible algorithms.

Furthermore, the researchers adopted a variety of strategies when interrogating their research questions: some tried to search the entire archive for broad historical phenomena, while others focused on a pre-defined subdomain (e.g., UK university websites, whose addresses end in .ac.uk), and analyzed everything contained within it. It is beyond the scope of this chapter to explore these approaches in great depth (Hale et al. 2014); rather, this example is used to highlight the diversity of strategies which can be utilized when dealing with large-scale web archives and how these methodological decisions are influenced by a researcher's own disciplinary training and academic mindset.

Recently much effort has gone into analyzing digital materials as "big data," and Brügger (2014) discusses the links between big data and web archives. He points out that whereas big data typically means having unprecedented amounts of data derived from capturing the whole of a data source (e.g., Twitter), web archives in contrast are always selective and capture only part of an ever-changing and incomplete whole: not everything can be archived in the case of the web. Yet this view misses the wood for the trees: one reason why the web is big data is that it is, in principle (though only imperfectly in practice), a digital object for which an attempt can be made to capture it in its entirety (as the Internet Archive is doing). This means that it fits the definition of big data provided by Schroeder (2014), which is that this object is bigger in scale and scope than other comparable objects (if we think of offline newspapers compared with online ones, or offline letters compared with blogs – or other text and video and audio content), partly because it subsumes or encapsulates these and other sources as part of a single whole. In this sense, it is a "big data" source.

Outlook

This chapter concludes by reflecting on the role of researchers in making the historical web – and new mobile media – a tool for analyzing social change in the future. In contrast to a digitized collection of newspapers where each daily

newspaper could be seen as one file in the collection, a web archive consists of billions of files. Individual web pages can be reconstructed from this huge assemblage of material for the sake of creating a usable web archive. This implies that the web archive can be put together in a number of ways, depending on researcher interests and research questions. For instance, one can represent the files in such a way that they look like the online web of the past, which is the approach of the Wayback Machine, used by the Internet Archive, among others. But one could also extract only the hyperlinks, the images, or the named entities with a view to making a network analysis, an image analysis, or a study of geographical space. In brief, there is no one ideal way to go from the files in the web archive to how they – or their content – are retrieved, presented, and analyzed.

However, this flexible and open structure of web archives does not in itself lead to better research, since the variety of ways of using archival material means that researchers may face a fragmented and incompatible landscape with no coherent gateways or means of access. Therefore, with a view to moving from an early and exploratory phase in the researcher use of the historical web to a more robust and well-established approach in the future, it will be necessary to develop strong and close collaborations between web archiving institutions and the web research communities that are gradually beginning to emerge. Researchers must inform the web archives about their research needs so that the web archives become useful for research, and web archives must inform the research communities about the possibilities and the constraints in preserving the web. If the full potential of the treasure trove of web archives is to come to fruition, researchers must engage in the development of the necessary researcher tools, including tools for evaluating the archived content and tools for exporting of content or of derived datasets, API access, and full text search. The last of these has been implemented in some of the existing web archives, such as the UK Web Archive, the Portuguese Web Archive, the Danish Netarkivet, and the Internet Archive's subscription archiving service Archive-it.

The web has now come of age, and it has even been supplemented with other types of digital networks, in particular social media on mobile platforms and based on apps. How these new media types are to be preserved and made available for future research projects is still open for debate, yet it is clear that we have already lost the first ten formative years of mobile media content. Still, social media are also used on the web, and preserving their web presence for the future will be an additional challenge.

To date, much of the use of web archives by researchers is being done in an ad hoc and unsystematic way. In the future, if researchers want to study social change and social media, they will have to approach the relevant archiving institutions and start to formulate the need to collect and preserve not only the web, but also new app-based mobile media types. Some of these are deliberately designed not to be preserved, such as Snapchat. It will also be hard to integrate the two types of collections, web and mobile, with a view to making cross-platform studies possible. Preserving the present for the future is an indispensable prerequisite for being able to study social change. How researchers will cope with ever proliferating digital

archival source materials will be a key determinant in the success of this growing and increasingly vital area of study.

References

- Aiden E, Michel J-B (2013) *Uncharted: big data as a lens on human culture*. Penguin, Harmondsworth
- Ainsworth SG, Alsum A, SalahEldeen H, Weigle MC, Nelson ML (2011) How much of the web is archived? In: Proceedings of the 11th annual international ACM/IEEE joint conference on Digital libraries, pp 133–136
- Ankerson MS (2010) Web industries, economies, aesthetics: mapping the look of the web in the dot-com era. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 173–194
- Brügger N (2005) Archiving websites: general considerations and strategies. *The Centre for Internet Studies*, Aarhus
- Brügger N (2011) Web archiving – between past, present, and future. In: Consalvo M, Ess C (eds) *The handbook of Internet studies*. Wiley-Blackwell, Oxford, pp 24–42
- Brügger N (2012a) Web history and the web as a historical source. *Zeithistorische Forschungen* 9(2):316–325
- Brügger N (2012b) When the present web is later the past: web historiography, digital history, and Internet studies. *Hist Soc Res* 37(4):102–117
- Brügger N (2013) Web historiography and Internet studies: challenges and perspectives. *New Media Soc* 15(5):752–764
- Brügger N (2014) Web archives and big data. Paper accepted for the 2nd workshop on big humanities data, Washington, DC
- Cowls J (2017) Cultures of the UK web. In: Brugger N, Schroeder R (eds) *The web as history*, pp 220–237
- Cowls J, Bright J (2017) International hyperlinks in online news media. In: Brugger N, Schroeder R (eds) *The web as history*, pp 101–116
- Engholm I (2010) Archiving and disseminating web history in a museum context: the case of webmuseum.dk. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 325–348
- Falkenberg V (2010) (R)evolution under construction: the dual history of online newspapers and newspapers online. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 233–256
- Foot K, Schneider S (2006) *Web campaigning*. MIT Press, Cambridge, MA
- Hale SA, Yasseri T, Cowls J, Meyer ET, Schroeder R, Margetts H (2014, July) Mapping the UK webspace: fifteen years of British universities on the web. In: ACM WebSci'14, Bloomington
- Havalais A (2010) The evolution of U.S. white nationalism on the web. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 83–104
- Hillis K (2010) Historicizing webcam culture: the telefetish as virtual object. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 137–154
- Hofheinz A (2010) A history of Allah.com. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 105–136
- Jesiek B, Hunsinger J (2010) Collecting and preserving memories from the Virginia Tech Tragedy: realizing a web archive. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 305–324
- Jessen IB (2010) The aesthetics of web advertising: methodological implications for the study of genre development. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 257–279
- Lindblom T (2010) Analysing and comparing the histories of web strategies of major media companies – case Finland. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 195–212
- Lindley SE, Marshall CC, Banks R, Sellen A, Regan T (2013) Rethinking the web as a personal archive. In: Proceedings of the 22nd international conference on World Wide Web, pp 749–760
- Milligan I (2013) Mining the Internet Graveyard: rethinking the historians' toolkit. *J Can Hist Assoc* 23(2):21–64

- Rosenzweig R (2003) Scarcity or abundance? Preserving the past in a digital era. *Am Hist Rev* 108(3):735–762
- Schroeder R (2014) Big Data and the brave new world of social media research. *Big Data Soc* July-December:1–11
- Segev E, Ahituv N (2010) Popular searches in Google and Yahoo!: a “digital divide” in information uses? *Inf Soc* 26(1):17–37
- Szope D (2010) Self-portrayal on the web. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 155–172
- Taneja H, Wu AX (2014) Does the Great Firewall really isolate the Chinese? Integrating access blockage with cultural factors to explain web user behavior. *Inf Soc* 30(5):297–309
- van den Heuvel C (2010) Web archiving in research and historical global laboratories. In: Brügger N (ed) *Web history*. Peter Lang, New York, pp 279–303
- Waller V (2011) Not just information: who searches for what on the search engine Google? *J Am Soc Inf Sci Technol* 62(4):761–775
- Wu AX, Taneja H (2016) Reimagining Internet geographies: a user-centric ethnological mapping of the World Wide Web. *J Comput-Mediat Commun*. <https://doi.org/10.1111/jcc4.12157>



Research Programs as a Tool to Map Internet Studies

28

Håkan Selg

Contents

Internet Studies as a Multidisciplinary Field	507
Attempts Made to Structure the Field	508
Conceptualizing Research Programs	508
Identifying the Research Programs	509
Discussion	511
Computer-Mediated Communication (CMC)	512
Origins	512
Assumptions about the Actor	512
Aim of Knowledge	513
Theories: An Overview	513
Methodology	514
Methods	515
Discussion	515
Human-Computer Interaction (HCI)	516
Origins	516
Aim of Knowledge	516
Assumptions about the Actor	517
Theories	517
Methodology	519
Methods	519
Discussion	519
Mass Communication Studies	520
Origins	520
Aim of Knowledge	521
Assumptions about the Actor	521
Theories	521
Uses and Gratification Theory	521

H. Selg (✉)

Department of Information Technology, Uppsala University, Uppsala, Sweden
e-mail: hakan.selg@it.uu.se

Diffusion of Innovations	522
Methodology	523
Methods	523
Discussion	523
Synthesis	524
Findings	524
Generalizability	525
Validity	525
Merits	525
References	526

Abstract

Internet studies is claimed to be multidisciplinary but under-theorized. In this chapter, Lakatos' concept of research program is proposed as an analytical tool to delineate and describe different research approaches with regard to theories and other guiding assumptions. Thinking in terms of research program is an analytical process that links the guiding assumptions to how the research is carried out.

To test the method, three suggested research programs have been characterized with reference to academic origin, aim of knowledge, assumptions about the actor, typical theories, methodologies, and methods:

- Computer-mediated communication
- Human-computer interaction
- Mass communication studies

The concept of research program helps the researcher to put a research case in its scientific context:

- Which are the basic assumptions that my research methods are founded upon?
- Are there additional tacit or implicit assumptions?
- How do these assumptions influence the organization of my research?
- Do they differ from the way other scientists in the field of Internet studies are doing their work?

Being aware of that the results obtained are based on certain assumptions and theories, explicitly or not, sharpens the critical thinking: What happens with my results if the assumptions are modified?

Keywords

Research programs · Internet studies · Information and communication technologies (ICT) · Computer-mediated communication · Human-computer interaction · Mass communication studies · Guiding assumptions · Research design · Multidisciplinary

Internet Studies as a Multidisciplinary Field

A glance through the *Author Presentations* in handbooks of Internet studies reveals researchers from a plethora of academic disciplines (see, e.g., Lievrouw and Livingstone 2006; Hunsinger et al. 2010; Consalvo and Ess 2011; Dutton 2013). The majority of the scholars reside within the (generous) field of social science, for example, communication and media studies, library and information science, or economics, to mention just a few. Yet contributors from the arts, e.g., languages or film studies, and natural sciences, such as computer sciences, are represented as well. The research topics cover a broad range of aspects related to the use of the Internet reflecting the disciplinary variety. Their respective research questions, scientific perspectives, and approaches consequently differ as well. A corresponding division can be observed as regards reference lists, scientific journals, and conferences. Even when it comes to the labeling of the field of study, a multitude of terms exist, such as information and communication technologies (ICT), Internet research, social informatics, and new media, to mention some. As a way out of the dilemma, Dutton suggests “Internet studies” as “an umbrella term under which an increasing number of scholars can bring their work” (2013, p. 13). In this chapter I will use “ICT” and “Internet studies” alternatively.

The frequently occurring attribute “multidisciplinary” is almost certainly justified. However, comments about Internet studies sometimes include the epithet “under-theorized,” meaning that underlying assumptions and theories are rarely stated explicitly. The combination of diversity and lack of theoretical references represents a source of confusion to the novice.

So how could this heterogeneity be understood? As something typical for recent fields of investigation where scientific rigor yet not is sufficiently developed?

Not necessarily. From the viewpoint of sociology of science, the methodological pluralism observed should be considered, not as an exception but as a normal state of affairs, mirroring the scientific landscape at large. In contrast to the view of science as a body of accumulated “facts” (see, i.e., Ayer 1940), several scholars have demonstrated how the intellectual process of validation of scientific claims is dependent on the rules of the games within a specific scientific community. Kuhn (1996/1962) speaks of scientific paradigms, Smelser (1968) of schools of thought, Collins (1983) and Rogers (2003/1962) of research traditions, and Knorr-Cetina (1999) of epistemic cultures.

There are other attempts to come to an understanding. Whitley (1984) points to the fact that the organization of science depends on the structure of the audiences for research results and the requirements on external funding. Internet studies represents a fairly inexpensive form of academic life that attracts the attention from diverse and numerous groups. Following Whitley low requirements of coordinated action are to be expected. Theoretical and methodological diversity may flourish.

Others take one step further. Nowotny et al. (2001) claim that it is increasingly difficult to establish a clear demarcation and differentiation between science and society due to the transformation of society during the latter part of the 20th century.

As a result we see the emergence of a postmodern society with a vital new intellectual culture closely associated with the cultural industries and, in particular, with the mass media. With competing claims of truths coming out from these dynamics, science can no longer claim exclusivity. Thus we may conclude that the methodological pluralism of Internet user studies should be considered a normal state of things reflecting the postmodern conditions of the fluid and rapidly evolving nature of the subject matter.

Attempts Made to Structure the Field

Efforts to delineate and map the field of study are not lacking though. As previously mentioned, handbooks of Internet research – such as this one – is one such attempt. It represents a *qualitative* approach in the sense that a group of editors, mostly renowned scientists, invite a number of colleagues to present their contributions that, taken together, capture the essence of the field. An alternative approach is bibliometrics, a set of methods designed to *quantitatively* analyze scientific literature (see, e.g., Kim and Weaver 2002; Tomasello et al. 2010; Peng et al. 2012; Rice and Fuller 2013). For example, content analyses are often associated with word frequencies. By coding the text with respect to the research question, the analyst can convert qualitative data into a quantitative form.

In this chapter, I will suggest an *analytically* inspired model to delineate and describe some approaches that are often employed in studies of the use of the Internet. The model builds on Imre Lakatos' concept of research programs, characterized by a “core” of basic assumptions that remain stable over time with “auxiliary hypotheses,” that is, supporting theories, that may be modified or replaced depending on changes in research focus (Lakatos and Musgrave 1970; Lakatos 1978). I find his idea of a core of basic assumptions constructive when considering the multidisciplinary properties of Internet studies; all theories may not be equally important. According to this view, the various research approaches each build on a set of basic assumptions that – regardless of which supporting theories they are combined with – lend a methodological profile to the research.

Conceptualizing Research Programs

The suggested research programs will be described in terms of *levels of scientific work*: philosophy, theory, methodology, and methods (Buckley 1967; Yurdusev 1993; Bruhn Jensen 2011). Furthermore, I will add the *aim of knowledge* that is embedded in the research question. According to Habermas's (1972) theory of knowledge, interest on the choice of scientific methodologies depends on the following kinds of interest – technical, practical, or emancipatory – that motivate the search for knowledge.

From the perspective that the unit of analysis in Internet studies typically is the actor, the *philosophical level* will above all be devoted to assumptions about the actor. The discussion will include collectives and networks as actors as they often appear as units of analysis in Internet studies. On the *theoretical level*, I will present some of the theories that are commonly used to support the analysis. Taken together, the philosophical level aligns with Lakatos' idea of a "core" of basic assumptions and the theoretical level with his supporting theories.

Bruhn Jensen (2011) makes an important distinction between methods and methodologies, with methods as concrete research instruments while methodologies refer to theoretically informed research designs. With a metaphorical expression:

...methods and methodologies represent two sides of an interface – the Janus face of research: methods face the objects of analysis; methodologies spring from the human subjectivity, which is not a source of noise, but a resource for scholarship, as disciplined through communication within research communities. (Bruhn Jensen 2011, p. 50)

Following Bruhn Jensen, I assign the *methodological level* a crucial role in the recapturing of significant elements of the research item: the research question(s) with the unit of analyses and its associated actor(s) concerned, the actor level of analysis, the basic assumption about the actor, and not least the aim of knowledge.

Together, these elements that are captured in the methodology concept determine the *methods* for empirical work; what kind of data should be collected, and from which units of observation, by which means - quantitative or qualitative -, and how the data further may be processed and analysed.

Internet user studies are of a relatively recent date, but if we assume the notion of scientific knowledge as a cumulative affair, we should expect to find antecedents. Thus the analyses are further complemented with a short description of the *academic origins* of the suggested research programs.

Identifying the Research Programs

The first point of departure for identifying relevant research programs is a statement made by Manuel Castells on technological convergence starting in the late 1970s (2000, p. 28 ff.). Computing and communication activities that were previously performed on different sets of hardware – information systems, personal computers, telecom artifacts, etc. – are now carried out via homogenized interfaces. Laptops, tablets, and smartphones are the most recent examples. In a similar way, different forms of communication technologies have been integrated into a single digitalized medium (van Dijk 2006).

Figure 1 outlines the technological convergences.

The second point of departure is "interactivity," a central characteristic of ICT. (For a comprehensive discussion of interactivity, defined as "a sequence of action and reaction," see van Dijk (2006, pp. 8–9).) According to McMillan (2006),

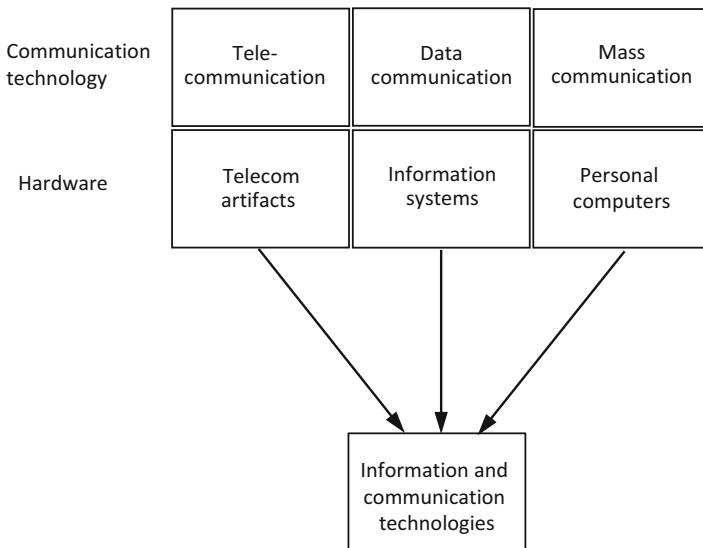


Fig. 1 ICT as converging technologies

interactivity means different things to different people in different contexts. She observes that the various notions of interactivity have emerged from multiple long-standing research traditions; that is, new media have been growing out of “old” media (By old or traditional media is commonly understood printed press, radio and television broadcasting, film and recorded music, etc. (van Dijk 2006, pp. 5–6). Rogers prefers the term “mass medium” for each one of these media forms that together make up for “mass communication” (1999, p. 628)).

Three such interactivity traditions of research are suggested (2006, pp. 205–206):

- *User-to-user interaction*, widely known as computer-mediated communication (CMC), with bases in human communication research.
- *User-to-system interaction* (With *user-to-computer interaction* as alternative term), as object of analysis in human-computer interaction (HCI) studies with origins in human factor research and computer sciences.
- *User-to-document interaction*, with traditions in mass media and journalism studies.

Figure 2 displays how user studies with respect to type of interactivity are related to this conceptual structure of ICT. *User-to-user studies* focus on mediated interpersonal communication, whereas *user-to-system studies* usually refer to the use of information systems. The *user-to-document interaction* signifies that the traditional mass media “audience” is not a passive receiver of information, but an active co-creator.

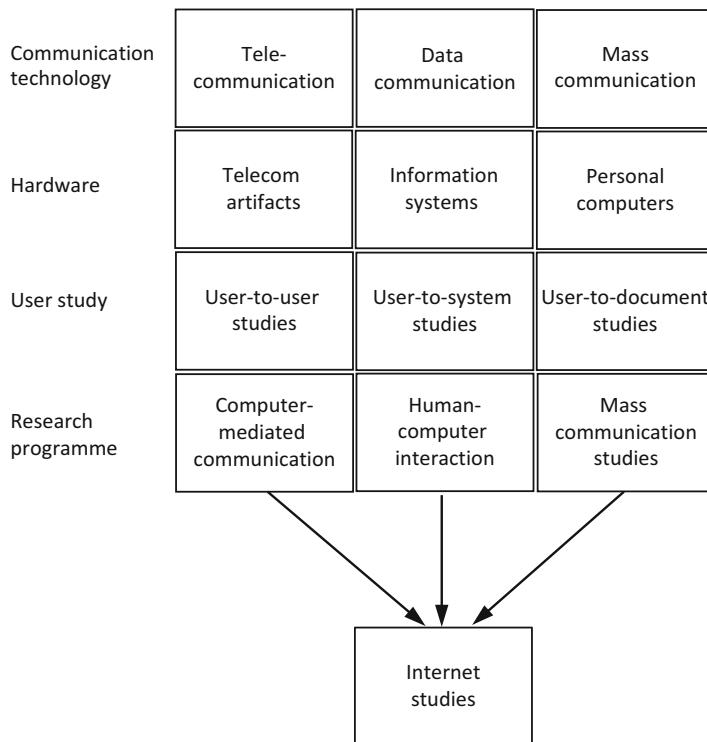


Fig. 2 Suggested research programs in Internet studies

As regards the labels of the research programs, two of them align to current terminology: *human-computer interaction (HCI)* and *computer-mediated communication (CMC)*. For the user-to-document studies, I suggest the label *mass communication studies* and with roots in mass media research.

Discussion

The three research programs suggested are derived upon the statements of technological convergence (Castells 2000) and interactivity characteristics (McMillan 2006). This particular outcome does not exclude that other research programs could be identified based on the same statements. In another publication (Selg 2014), I discuss *Internet in Everyday Life*, with roots in British media studies and anthropology. Also the changing of the initial statements for the analysis may generate other suggestions. For example, by taking the disruptive properties of ICT technologies as point of departure (see, e.g., Christensen 1997), *Internet and Structural Change*, an economically oriented research program with a Schumpeterian perspective, may be identified (Selg 2014).

Computer-Mediated Communication (CMC)

Origins

Studies of user-to-user interaction are typically carried out within the realm of interpersonal communication, typical for the humanities. Bruhn Jensen (2002a) underscores the classical origins of communication studies: rhetoric, hermeneutics, phenomenology, and semiotics. These traditions informed the disciplines – from linguistics and literature studies to art history and film studies – which ultimately fed into the field of media and communication. Within linguistics, Bruhn Jensen continues, there has been a shift from traditional studies of grammar, semantics, and phonetics to the study of the social uses of language in a specific context. Renewed interest in interpersonal communication brought about by advances in computer-mediated communication has reinforced this change of focus (Bruhn Jensen 2002b).

According to McMillan (2006), symbolic interaction provided the basis for a body of literature that began to develop in the late 1980s. It examined how new means of communication might impact on the content richness, the symbolic cues, and the situational determinants of media choice such as time and distance.

Assumptions about the Actor

Symbolic interactionism derives from George H. Mead (1863–1931) and his analysis of social interaction. (Mead himself never used the term symbolic interactionism but considered himself to be a social behaviorist (1972/1934). The term was coined by Herbert Blumer (1900–1987), Mead's ex-student and prominent interpreter.) The human nature according to Mead is characterized by reflexivity. The basic condition for the capacity to reflect lies in the self-consciousness, with the notion of the “self” as the capacity of humans to refer to themselves, their history, and future (Mead 1972/1934). In order to develop the self, it is necessary to see oneself from the outside. Mead speaks of *role-taking*, which means adopting the attitudes of others by placing oneself in their position, and with the concept of the *generalized other*, representing the attitudes of society as a whole. Hence, an individual while being a subject, at the same time, can be her/his own object, that is, the “self” is made up of both “I” and “me” (Mead 1972/1934).

Symbolic interactionism considers meaning as arising in the process of interaction between people (Blumer 1969). The most important symbolic means is language. By mutually influencing each other, the meaning of an object is made conscious to the individuals involved in the interaction. It is important to note that such an object of consciousness differs from a physical stimulus in behaviorist theories; the object gets its meaning from the individual that acts against it, while the properties of physical stimulus are independent of the influences of the individual. In this way the individual shapes his/her objects and reacts to their meanings rather than their factual properties. An object may thus have a different meaning for

different individuals: “. . . a tree will be a different object to a botanist, a lumberman, a poet, and a home gardener” (Blumer 1969, p. 11).

The thoughts of Mead on the self and how it is constituted in interaction with others have given rise to conflicting interpretations with roots in the nature of the self. According to *behaviorist interactionism*, the self is constituted as a set of attitudes toward oneself and with role preferences and role expectations as vital concepts (M. H. Kuhn and McPartland 1954). Such a set of attitudes is considered a relatively stable structure that serves as an organizing principle for the personality. With this perspective the behavior of an individual is to a great extent determined by personality and role patterns, behavior that is possible to generalize and predict. The other approach is referred to as *phenomenological interactionism* and with Blumer as the leading spokesman. (Alternative labels for the two movements are the Chicago school (Blumer) and Iowa school (Kuhn) according to the universities where the respective protagonists had their appointments.) Blumer (1969) disapproves of the notion of the self as a fixed set of attitudes that determine human action. Action is constructed by the actor; it is not a response generated by some kind of preformed organization in that actor.

Aim of Knowledge

In Blumer’s view then, man is portrayed as deliberative, while Kuhn sees man as determined (Petras and Meltzer 1994). In terms of knowledge aims, the purpose of behaviorist interactionism is causal explanation aiming at prediction, whereas understanding through interpretation is the objective of phenomenological interactionism (Blumer 1969).

Theories: An Overview

Face-to-face transactions represent the prototypical dimensions and expectations to which communicators are accustomed (Walther 1992). Accordingly, there has been an early interest in research on the differences between face-to-face and computer-mediated social interaction referred to as *media effect studies*. The absence of nonverbal behavior such as nods, smiles, eye contact, tone of voice, touching, and gesturing produces a weakened social influence. Moreover, such nonverbal feedback represents important information on how to regulate, modify, and control the exchange. Electronic access provides few status and position cues which results in participation on a more equal basis. In addition the availability of instantaneous digital communication might lead people to expect immediate responses (Kiesler et al. 1984). Another effect highlighted is the depersonalization of the messages due to the lack of nonverbal cues. Kiesler et al. (1984) observe that the “social anonymity” invites a stronger and more uninhibited text. A current term for this phenomenon is “flaming,” an expression of “antisocial communication” (Walther et al. 1994).

Media choice theories deal with the topic of how people make choices about different media to use in their communication with others. For example, *contingency theory* argues that the effective users match their choice of medium to the requirements of the communication situation (Steinfield 1992). Other theories such as *social presence theory* (Short et al. 1976) and *media richness theory* (Trevino et al. 1987) hold that the attributes of the media, such as the speed of feedback and the capacity to mediate nonverbal cues, make them more or less appropriate for certain types of interactions. Media choice theories assign importance to the characteristics of a particular media for guiding use in a particular social situation. The assumption is that some media are more efficient than others in terms of compliance with the intentions of the actor(s).

Media choice theories attempt to explain media choice as a function of media characteristics and actor rationality. However, such theories fail to explain a number of studies that have found differences in attitudes or patterns of use across groups using the same medium. In contrast, the *social influence model* (Fulk et al. 1987; Schmitz and Fulk 1991) understands the media choice as a subjectivist process where co-workers' opinions and attitudes are of at least equal importance as media characteristics. The media characteristics approach suggests that when distribution of access is relatively even and communication task requirements are similar, patterns of media use should be relatively homogeneous. In contrast, the social influence model predicts different patterns of use across groups due to differences in social norms and interaction patterns, even though communication tasks and media options are comparable.

Methodology

The theories presented offer analytically quite different approaches which make the situation far from clear-cut from methodological viewpoints. Firstly, the units of analysis and their associated levels of analysis differ. Media choice theories and social influence theories have the individual user's action as unit of analysis on a micro level. Media effect studies focus on communication cultures which in terms of level of analysis takes the analyses to a group or meso level. The varied landscape of units of analysis is also reflected in units of observations implied: individuals in media choice and social influence theories and groups in media effect studies.

Secondly, the assumptions about the actor differ as well. Behaviorist interactionism (the "Iowa school") sees action to a great extent as determined by personality and role patterns, whereas phenomenological interactionism ("the Chicago school") stresses the reflexive nature of human action, with an important element of unpredictability. While behaviorist interactionists advocate testing a hypothesis for validity, phenomenologists reject the positivistic notion of a single method of scientific study, arguing that scientific methodology must reflect the nature of the matter being studied.

Methods

Thus we end up with different sets of methods depending on interpretation of the nature of the self. Behaviorist interactionism is associated with data gathering through questionnaires and statistical analysis as a means of testing hypotheses. The scientific procedure consists of operationalizing the variables, which generally means designing affirmative expressions in the questionnaire that respondents may approve/disapprove of, often using scaling methods such as Likert scales. Statistical coefficients such as coefficient of determination (R^2) and beta coefficient (β) (Standardized regression coefficient that allows for a direct comparison between coefficients as to their explanatory power of the dependent variable (Hair et al. 2006, p. 170)) are used as indicators. In contrast phenomenological interactionism advocates qualitative approaches. In studies of user-to-user interaction, ethnographic fieldwork is a well-established approach encompassing participant observation, qualitative interviews, and analysis of cultural artifacts (boyd 2008).

Discussion

How does this division impact on computer-mediated communication as a research program? Is there one stable core of basic assumptions that characterize the research program or are there several? Unfortunately, references to the one school or the other are seldom found in CMC studies, so that the reader is mostly left with guesswork based on the authors' choice of methods and knowledge aims. But since there seems to be a common base in symbolic interactionism – with different interpretations however – computer-mediated communication could be considered to fulfill the

Table 1 Methodological overview of computer-mediated communication

Suggested research program: Computer-mediated communication	
Academic origin	The humanities
Assumptions about actors	Actions determined by personality and role patterns (the “Iowa school”) Actions guided by reflexive interpretation based on meaning (the “Chicago school”)
Aim of knowledge	Causal explanation/prediction (“Iowa school”) Understanding (“Chicago school”)
Typical theories	Media choice theories Social influence model
Typical unit of analysis	Users’ choice of communicative tool User appropriation of social network sites
Typical level of analysis	Micro (individual users), meso (user patterns)
Unit of observation	Individual users/groups of users
Typical methods	Ethnographic field work (“Chicago school”) Survey questionnaires (“Iowa school”)

criteria of a hard core of assumptions. The discussion of supporting theories is shorter: As we have seen, several versions of media choice theories and social influence theories have been introduced (Table 1).

Human-Computer Interaction (HCI)

Origins

With disciplinary origins in computer science, initially, HCI had two foci, methods and software, and a major theme was the integration of the two into a framework called user-centered systems development. The methods' focus came to be known as *usability engineering* (Carroll 2002). Usability engineering also required knowledge about what people experience and how they behave when they interact with computers. Here, the basic assumptions about the user, and her or his behavior when confronted with a specific software interface, were provided by psychology. As we shall see, several of the most commonly employed theoretical frameworks in the studies of user-to-system interaction have their intellectual foundations in cognitive psychology. Furthermore, field studies of work practices showed that people not only react to what is presented to them on the screen; they also do their work and use their tools in creative ways. Such experiences contributed to bringing sociology into the studies of direct user participation in the development processes. This tendency was further underscored by the recognition from studies of computer-supported cooperative work (CSCW) studies, claiming that all uses of computer systems occur in a social context (Carroll 2002).

Aim of Knowledge

One area of HCI research is concerned with the issues of how and why individuals adopt new information technologies. This area of inquiry takes on a deterministic view, assuming the information system to be an objective reality to the user. Orlikowski (1992) speaks of the *use mode* in human interaction with technology. With roots in behaviorism, mainstream scientific research on social psychology centers on studying causal explanations of human agency aiming at prediction. The other area of research relates to systems development with focus on usability matters, the *design mode* (Orlikowski 1992). When designing the system, the developers receive information about the anticipated use of the system and its social contexts from external sources. This kind of research is generally undertaken with a constructivist perspective using sociologically inspired approaches. Here the interaction between people and machines has much in common with interaction between people, an essentially interpretive process aiming at understanding (Suchman 1987). A third aim of knowledge may be political in the sense that systems development includes aspects of enhancing the autonomy of groups of users or other stakeholders.

Assumptions about the Actor

With prediction as aim of knowledge, user interaction with technology is the dependent variable and is generally claimed to be a function of the user's intention or motivation. As a common feature, this research draws on social psychology, often with strong influences from social cognitive theory, and in particular the notion of self-efficacy (Ajzen 1991; Davis et al. 1989). Social cognitive theory considers human motivation and action as purposive and regulated by forethought (Bandura 1991). By acquisition of response information from one's own experiences and from observing others, i.e., by "learning," people form beliefs about behavior, expected outcomes, and reinforcements. The *self-efficacy* mechanism plays a central role in the exercise of personal agency. People judge their capabilities to perform a particular action, which affects their motivation and behavior.

In contrast, when the aim of knowledge is to achieve an understanding of user's interaction with technology, the focus is placed on the meaning rather than factual qualities. As outlined in the previous section, the assumption is that of a reflexive user that shapes the system and reacts on its meaning through interaction with people.

Theories

Technology Acceptance Models

Of all the theories that describe an individual's acceptance of information systems, the *technology acceptance model* (TAM) with roots in social cognitive theory is considered the most influential and commonly employed (Lee et al. 2003; Venkatesh and Bala 2008). TAM posits that two particular beliefs – perceived usefulness and perceived ease of use – are of primary relevance for computer acceptance behaviors (Davis et al. 1989).

Perceived usefulness is defined as the prospective user's subjective perception that using a specific application system will increase his or her job performance within an organizational context. The underlying assumptions of actors are based on instrumental means-end motivation. *Perceived ease of use* refers to the degree to which the prospective user expects the target system to be free of effort. This will influence the user's attitude by the cognitive mechanism of self-efficacy: The easier a system is to interact with, the greater should be the user's sense of efficacy (Bandura 1982). Additionally, improvements in the ease of use may also be instrumental in contributing to increased performance and consequently may have a direct effect on perceived usefulness. Here, we see the linkage to the *usability* purpose of HCI.

Self-Determination Theory

Social cognitive theory highlights the relationships between knowledge and behavior, but it does not deal with the question of why certain outcomes are desired. *Self-determination theory* (SDT) offers analytical tools to explain and predict why the individual perceives some behaviors as more attractive than others (Deci et al. 1991).

Participation in open-source software (OSS) development combines the earlier presented use and design modes. In order to uncover the often complex set of motives among OSS participants, self-determination theory has been successfully applied in several projects (Rossi and Bonaccorsi 2005).

There are two kinds of motivation according to SDT. *Intrinsic motivation* is defined as the doing of an activity for its inherent satisfaction rather than for the attainment of some particular outcome. When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than because of external pressures or rewards. This represents the prototype of self-determined behavior (Ryan and Deci 2000). The term *extrinsic motivation* refers to the performance of an activity in order to attain some distinguishable outcome. Extrinsic motivators thus seem to be opposite of self-determination. However, SDT proposes that extrinsic motivations can vary greatly in their relative autonomy. Through *internalization* and *integration*, extrinsically motivated behaviors may become more self-determined.

Some Social and Organizational Theories

Habermasian-inspired approaches to the usability of ICT systems argue that the use of an ICT system could not only be considered an act of cognitive instrumentality but must also be seen in a social action context. Hence, usability considerations, besides involving effectiveness, efficiency, and satisfaction, must take into account mutual understanding and intersubjective trust (Ågerfalk and Eriksson 2006).

Activity theory proposes that activity cannot be understood without understanding the role of artifacts in everyday life, especially the way in which artifacts are integrated into social practice (Nardi 1996). Applied in a HCI context, the analysis and design of user interfaces have to be performed by people who know enough about the professional practices in their particular context (Bødker 1989).

The close association between users and artifacts is even more pronounced in *actor-network theory (ANT)*. According to ANT, human and nonhuman actors, also denoted “actants,” are linked together in a web of relationships referred to as an actor network. The focal actor is the actant that engages the other actants within the network to reach its goal. When an actor network has reached this state, the network is stable and irreversible (Callon 1987).

Structuralist approaches offer a tool for analyzing and understanding the reciprocal influence of design and use. The *designers* are influenced by external requirements that mirror the organizational and social contexts in which the technology will be used. This stage represents the perspective of technology as a socially constructed product. In contrast, the *users* of the system often perceive it to be a closed system, a “black box.” This stage reflects the determinist viewpoint with users experiencing technology as an objective reality (Orlikowski 1992). However, the deterministic aspect is neither absolute nor permanent. By appropriation, users bring the technology into their use. There is nothing automatic about this process; rather, people actively select how technology structures are used, so that adoption practices vary often in unintended and/or unexpected ways (DeSanctis and Poole 1994).

Methodology

The theoretical pluralism of HCI research is reflected in a plethora of research approaches. Kock (2004) distinguishes between experimental research, survey research, case research, and action research (2004, p. 267). In the *use mode*, the aim of knowledge is to provide causal explanations and predictions about usability matters. Typical approaches are *experimental* and *survey research* where the assumptions about the actors draw on behavioral intentions from social psychology.

In the *design mode*, the aim of knowledge is to reach mutual understanding and consensus about ICT design and the settings of such new practices that are part of the system. This is basically an interpretive process by reflexive actors. Or in a conflictive perspective, the aim of knowledge may be political in the sense that systems development includes aspects of enhancing the autonomy of groups of users or other stakeholders. Typical approaches are *case studies* and *action research*.

The design and adoption of ICT systems as unit of analysis is found to be on a meso level. Individual users and systems developers serve as units of observation.

Methods

Explanatory models such as TAM are generally associated with experimental and survey approaches with data gathering and statistical methods.

As regards the methods employed in case research and action research, typical for design mode, qualitative methods dominate. A distinctive property of HCI studies compared with the other research programs described is the action research with the “dual imperatives of problem solving and research” (McKay and Marshall 2001, p. 57). According to Baskerville and Pries-Heje (1999), the inductive grounded theory (Glaser and Strauss 1967) is particularly well suited for action research.

Discussion

Following this rather extensive survey of theoretical frameworks that are more or less explicitly drawn upon in HCI-related research, the question is: Can human-computer interaction be regarded as a research program? My impression is that it is not possible this time. Orlowski’s “duality of technology,” with a division into use mode and design mode, is an elegant way to structure the HCI research field and neutralize the determinist-constructivist dilemma. However, a core of basic assumptions that with Lakatos’ terminology serves as characterizing property of the research program cannot be identified. On the one hand, there is the design mode with basic assumptions originating from sociology including science and technology studies (STS). On the other, explanations of the use mode draw on basic assumptions from cognitive psychology. The findings thus suggest two distinct research programs: use mode and design mode in human-computer interaction (Table 2).

Table 2 Methodological overview of human-computer interaction

	Suggested research program: Human-computer interaction	
	<i>Use mode</i>	<i>Design mode</i>
Academic origin	Computer science	Computer science
Aim of knowledge	Casual explanation/prediction	Mutual understanding Setting of new practices Enhanced autonomy
Assumptions about actors	Behavioral intentions formed by external motivations and psychological needs (cognitive psychology)	Interpretations of how technology affects design and interaction by reflexive actors in interaction
Typical theories	Technology acceptance models self-determination theory	Self-determination theory Social and organizational theories
Typical unit of analysis	Design and adoption of ICT systems	Design and adoption of ICT systems
Typical level of analysis	Meso (ICT systems)	Meso (ICT systems)
Unit of observation	Individual users/groups of users, system developers	Individual users/groups of users, system developers
Typical methods	Experimental, survey questionnaires	Case studies, action research

Mass Communication Studies

Origins

Media and communication studies developed in parallel with studies in modern sociology as an emerging academic discipline. The dominant mode of thinking about society from 1950 and onward was one of *structural functionalism* with Talcott Parsons (1902–1979) as principle architect. Structural functionalism presented a model of society as a smoothly functioning, self-correcting organism. In this process, media and communication systems were described as components of a larger social system in which media organizations and their audiences were equal and parallel entities. However, the contribution to media and communication research is as much a history of *commercial research* as of academic projects (Murdock 2012). The commercially motivated current of research focus is on the media audiences and the impacts of media on their audiences.

During the 1960s and 1970s, Parsons' ideas came under sharp criticism: for his emphasis of values and norms instead of material interests, for the neglect of power relations, and for the inability of his model to explain social change and social conflict (Turner 1991). However, in the 1980s, certain aspects of functionalism reappeared, and according to the neo-functional school of thought, with Jeffrey C. Alexander, Thomas Buckley and Niklas Luhman as prominent scholars, some of the basic systemic elements provide useful theoretical tools for sociology today (Calhoun et al. 2007).

Aim of Knowledge

Within the tradition of mass communication studies, the broad current of Internet studies focuses on patterns of technology adoption and of technology use, respectively. The aim is to discover and describe such patterns and, perhaps equally important, to identify user characteristics that could be associated with a certain pattern of use. The aim is predictive; such knowledge is required by commercial actors, for example, when making decisions about how to allocate their marketing budgets between different media alternatives.

Assumptions about the Actor

Structural functionalism builds on a voluntaristic concept of *action* that draws heavily on Max Weber's writings on social action characterized by *rationality* and with the rational actor taking into consideration the expected behavior of others' (Weber 1947). However, the heavy reliance of diffusion research on quantitative methods for data gathering (Of nine major research traditions, reported by Rogers, eight of them employ statistical analysis (2003/1962, pp. 44–45).) rather points in the behaviorist direction.

According to behaviorism, behind each human *act* (N.b. not “action”) there must be a “cause” (Watson 1929). The methodological task consists in translating such subjective acts into observable mechanistic-like behavior apt for stating hypothesis on causal relationships that can be tested in the same way as in physics or chemistry. The core of behaviorist theory states that the behavior of humans is *conditioned* by the kind of reinforcement following from a stimulus-response process, where stimulus could be anything which may excite activity in a receptor. The relations among the three terms – stimulus, response, and reinforcement – comprise the substantial field of behaviorist investigation (Skinner 1963).

Theories

Uses and Gratification Theory

Uses and gratifications theory (UGT) is the major research tradition within mass communication, with its roots in media effect studies (Blumler and Katz 1974; Ruggiero 2000). Although the UGT perspective has “inspired an abundance of empirical work” (Lin 1996, p. 575), few studies about Internet use make explicit reference to this approach (Subject to my omissions, in five handbooks of Internet studies examined, I have only found one reference to UGT (Rice and Haythornthwaite 2006, p. 105).). However, it is my impression that many quantitative studies, tacitly and implicitly, seem to implement (parts of) the UGT approach.

The basic assumption of UGT is that media consumption is initiated by a set of self-aware needs that motivates the audience to actively seek out mediated content

for gratification of those needs (Lin 1996). The needs may be psychological or social. Psychological needs to be satisfied by media can be of *cognitive* nature, such as information, knowledge, and understanding. *Affective* needs are related to pleasure, aesthetics, and emotions. *Social* needs are often associated with contacts with family, friends, and to one's social roles (Katz et al. 1973). If the audience member obtains the expected outcome from the selected medium, it will feedback to reinforce the initial belief. Thus an underlying assumption in UGT is that of a goal-directed audience member that actively selects his or her media contents.

Other UGT researchers have questioned the assumptions about the active audience concept suggesting that all audience members are not equally active at all times and that certain types of media consumption are ritual in character. Thus a distinction can be between *instrumental* and *ritualized* media use, with the first category consuming media depending on expected media content. In contrast, the media use of the latter grouping is made in a relatively undiscriminating way, suggesting a primary relation with the medium itself, rather than with any specific content (Ruggiero 2000).

Diffusion of Innovations

Since almost half a century, Everett Rogers' *Diffusion of Innovations* (2003/1962) is a standard work for describing and analyzing how new technologies are diffused and adopted. Adoption is conceived as a rational innovation-decision process in several successive stages where the individual – the micro level – passes from (1) gaining initial knowledge of an innovation, (2) forming an attitude toward the innovation, (3) making a decision to adopt or reject, (4) implementation of the new idea, to (5) the confirmation of this decision (Rogers 2003/1962, p. 168).

Individuals in a social system do not all adopt an innovation at the same time. Rogers refers the observed variation in time of adoption to differences in innovativeness, defined as the degree to which an individual is earlier to adopt new ideas than other members of the system. Based on similarities in innovativeness, Rogers made his well-known classification into five adopter categories: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards (2003/1962/1962, p. 22). He also noted that the adoption process, when plotted over time on a frequency basis, usually follows a normal, bell-shaped curve. If the cumulative number of adopters – the macro level – is plotted, the result is an S-shaped curve.

One of the criticisms of diffusion theories is that it tends to be pro-innovation biased, meaning that the implicit assumption is that an innovation should be diffused and adopted by all members of a social system, that it should be diffused more rapidly, and that the innovation should be neither reinvented nor rejected. From this follows also an individual-blame bias, that is, the tendency to hold the individual responsible for his or her problems related to the diffusion and adoption, rather than the system of which the individual is a part (Rogers 2003/1962).

Methodology

In the suggested research program mass communication studies, the research questions or units of analysis typically are patterns of adoption and use as collective phenomenon, which indicates a meso or macro level of analysis, depending on the characteristics of the population studied. ICT adoption studies are often carried out on a national level (macro), but there are also examples of user studies in geographical neighborhoods and among users who share a common interest (meso). The individual user is unit of observation.

As regards assumptions about the users, the picture as we have seen points in the behaviorist direction. Moreover, it is evident that the uses and gratifications approach is based on behaviorist assumptions about the actor, which also fits into the predictive scope of the approach. But as we have seen, there are also conflicting assumptions about human actions based on voluntarism derived from the social theory of Weber and Parsons. But as Murdock observes, the sociological approach to audience studies “has had an uphill struggle” as the predictive properties of behaviorism accommodated such needs more satisfactorily (2012, p. 59).

Methods

Media-related research has relied primarily on survey techniques where the audience member/user selects from a list of hypothesized needs (Katz et al. 1973). A common approach is to map user categories in socioeconomic terms such as age, gender, education, income, and ethnicity, to mention the most common. The scientific approach is clearly explanatory, with explicitly or, perhaps more often, tacit assumptions of dependent variables – patterns of Internet use – to be explained by the independent socioeconomic variables. The argument in favor of the use of quantitative methods and statistical analysis as research tools is that they have provided knowledge about general patterns, trends, and relationships with far more accuracy than is possible through interpretive approaches. However, Ruggiero (2000) considers the quantitative and qualitative methods as complementary: The use of both questionnaires and interviews combines the strength of survey data with the richness of, e.g., in-depth interviews. Besides, different levels of analysis – individual, organizational, societal, and cultural – may require the use of multiple methods in the same study.

Discussion

My view is that structural-functionalism sociology complies with the criterion of a core of basic assumptions. The structural-functional view of society is one of structures or subsystems – groups, firms, etc., which interact with each other in adaptive processes. The study of such subsystems is a means to understand society

Table 3 Methodological overview of mass communication studies

Suggested research program: Mass communication studies	
Academic origin	Structural-functionalism sociology
Assumptions about actors	Human acts conditioned by positive or negative reinforcement (behaviorism)
Aim of knowledge	Causal explanation/prediction
Typical theories	Uses and gratification theories Diffusion of innovations
Typical unit of analysis	Patterns of media consumption
Typical level of analysis	Population categories (meso-macro)
Unit of observation	Individuals
Typical methods	Survey questionnaires

and thus of an explanatory nature. As important supporting theories, I propose U&G theories, sometimes along with diffusion theory, frequently used in research on media audiences. Here the aim of research is mostly predictive, which to a large extent conditions the choice of methods – generally quantitative surveys. Although it is seldom stated explicitly, this research seems to draw on behaviorist assumptions about human nature (Table 3).

Synthesis

Internet studies is claimed to be multidisciplinary but under-theorized. In this chapter Lakatos' concept of research program is proposed as an analytical tool to delineate and describe different research approaches with regard to theories and other guiding assumptions.

Findings

To test the method, three suggested research programs have been characterized with reference to academic origin, aim of knowledge, assumptions about the actor, typical theories, methodologies, and methods:

- Computer-mediated communication.
- Human-computer interaction.
- Mass communication studies.

Two of the suggested research programs on the list, computer-mediated communication and mass communication studies, are found to comply with Lakatos' concept of a core of basic assumptions combined with supporting theories. In contrast, human-computer interaction could not be successfully assigned as *one* research program, due to the divergent assumptions about the actors and typical

theories. As an alternative solution, I suggest a division into *two* research programs – HCI/use mode and HCI/design mode, respectively.

Generalizability

The three suggested research programs were identified on the statements of converging technologies on the one hand and interactivity characteristics on the other. However, they must be considered as examples; other research programs may be derived from the same statements, not to mention when these statements are modified or altered. This means that other researchers with equivalent aims to propose theoretical frameworks in order to cope with multidisciplinary research situations might well come to different suggestions. Above all thinking in terms of research program is an analytical process that links the guiding assumptions to how the research is carried out. Thus I am convinced that the structuring method *per se* is generalizable; that it may be productive for other research scientists and not only those working in the field of Internet studies. Rather, the concept of the research program can be applied in any multidisciplinary field of study.

Validity

Some comments shall be made on the validity of these findings. This meta-theoretical study has been carried out from a hermeneutic perspective based on the interpretation of written sources, aiming at understanding (Dilthey 1976; Gadamer 1995). An essential issue in hermeneutics concerns the validity of the results: How do we distinguish good scientific research from bad? As this is such a broad and complex issue, I will not presume to delve too deeply into this matter here. Habermas, discussing the works of Pierce and Dilthey, underlines the logic of the procedure with whose aid we obtain scientific theories (1972, pp. 91–92). Although we cannot claim definitive validity, nevertheless the scientific method gives us the certainty that every adequately formulated question must find a definitive answer if the process of inquiry is carried far enough.

Merits

The concept of research program helps the researcher to put a research case in its scientific context. Which are the basic assumptions that my research methods are founded upon? Are there additional tacit or implicit assumptions? How do these assumptions influence the organization of my research? Do they differ from the way other scientists in the field of Internet studies are doing their work? Being aware of that the results obtained are based on certain assumptions and theories, explicitly or not, sharpens the critical thinking: What happens with my results if the assumptions are modified?

References

- Agerfalk PJ, Eriksson O (2006) Socio-instrumental usability: IT is all about social action. *J Inf Technol* 21:24–39
- Ajzen I (1991) The theory of planned behavior. *Theories of Cognitive Self-Regulation* 50 (2):179–211
- Ayer AJ (1940) The foundations of empirical knowledge. Macmillan, London
- Bandura A (1982) Self-efficacy mechanism in human agency. *Am Psychol* 37(2):122–147
- Bandura A (1991) Social cognitive theory of self-regulation. *Organ Behav Hum Decis Process* 50 (2):248–287
- Baskerville R, Pries-Heje J (1999) Grounded action research: a method for understanding IT in practice. *Account Manag Inf Technol* 9(1):1–23
- Blumer H (1969) Symbolic interactionism: perspective and method. Prentice-Hall, Englewood Cliffs
- Blumler JG, Katz E (1974) The uses of mass communications: current perspectives on gratifications research, Sage annual reviews of communication research, vol 3. Sage, Beverly Hills 99-0104091-4
- Bødker S (1989) A human activity approach to user interfaces. *Human-Computer Interaction* 4(3):171
- boyd dm (2008) Taken out of context: American teen sociality in networked publics. Dissertation Thesis, University of California, Berkely
- Bruhn Jensen K (2002a) Chapter 1: introduction. In: *A handbook of media and communication research: qualitative and quantitative methodologies*. Routledge, London, pp 1–11
- Bruhn Jensen K (2002b) Chapter 2: the humanities in media and communication research. In: *A handbook of media and communication research: qualitative and quantitative methodologies*. Routledge, London, pp 15–39
- Bruhn Jensen K (2011) New media. Old methods - internet methodologies and the online/offline divide. In: Consalvo M, Ess C (eds) *The handbook of internet studies*. Wiley-Blackwell, Chichester, pp 43–58
- Buckley W (1967) Sociology and modern systems theory, Prentice-hall sociology series. Prentice-Hall, Englewood Cliffs
- Calhoun CJ, Gerteis J, Moody J, Pfaff S, Virk I (eds) (2007) *Classical sociological theory*, 2nd edn. Blackwell, Malden
- Callon M (1987) Society in the Making: the study of technology as a tool for sociological analysis. In: Bijker WE, Hughes TP, Pinch TJ (eds) *The social construction of technological systems: new directions in the sociology and history of technology*. MIT Press, Cambridge, MA, pp 77–98
- Carroll JM (2002) Introduction: human-computer interaction, the past and the present. In: Carroll JM (ed) *Human-computer interaction in the new millennium*. ACM Press/Addison-Wesley, New York/Boston, pp xxvii–xxxvii
- Castells M (2000) The information age: economy, society and culture. Vol. 1, the rise of the network society. Blackwell, Malden
- Christensen CM (1997) The Innovator's dilemma: when new technologies cause great firms to fail. Harvard Business Press, Boston
- Collins HM (1983) The sociology of scientific knowledge: studies of contemporary science. *Annu Rev Sociol* 9(1):265–285
- Consalvo M, Ess C (eds) (2011) *The handbook of internet studies*. Wiley-Blackwell, Chichester
- Davis FD, Bagozzi RP, Warshaw PR (1989) User acceptance of computer technology: a comparison of two theoretical models. *Manag Sci* 35(8):982–1003
- Deci EL, Vallerand RJ, Pelletier LG, Ryan RM (1991) Motivation and education: the self-determination perspective. *Educ Psychol* 26(3/4):325
- DeSanctis G, Poole MS (1994) Capturing the complexity in advanced technology use: adaptive structuration theory. *Organ Sci* 5(2):121–147
- Dilthey W (1976) Selected writings. Edited by H. P. Rickman. Cambridge Univ. Press, Cambridge
- Dutton WH (ed) (2013) *The Oxford handbook of internet studies*. Oxford University Press, Oxford

- Fulk J, Steinfield CW, Schmitz J, Power JG (1987) A social information processing model of media use in organizations. *Commun Res* 14(5):529–552
- Gadamer HG (1995) Truth and method (trans: Weinsheimer J, Marshall DG, 2nd rev. edn). Continuum, New York. First published in German 1960
- Glaser BG, Strauss AL (1967) The discovery of grounded theory: strategies for qualitative research. Aldine de Gruyter, New York
- Habermas J (1972) Knowledge and Human Interests. Beacon Paperback. Beacon Press, Boston, p 422. 99-0102495-1
- Hunsinger J, Klastrup L, Allen M (eds) (2010) *The International Handbook of Internet Research*. Dordrecht. Springer, New York
- Katz E, Haas H, Gurevitch M (1973) On the use of the mass Media for Important Things. *Am Sociol Rev* 38(2):164–181
- Kiesler S, Siegler J, McGuire TW (1984) Social psychological aspects of computer-mediated communication. *Am Psychol* 39(10):1123–1134
- Kim ST, Weaver D (2002) Communication research about the internet: a thematic meta-analysis. *New Media Soc* 4(4):518–538
- Knorr-Cetina K (1999) Epistemic cultures: how the sciences make knowledge. Harvard University Press, Cambridge, MA
- Kock N (2004) The three threats of action research: a discussion of methodological antidotes in the context of an information systems study. *Decis Support Syst* 37(2):265–286
- Kuhn MH, McPartland TS (1954) An empirical investigation of self-attitudes. *Am Sociol Rev* 19 (1):68–76
- Kuhn TS (1996/1962) The structure of scientific revolutions. 3rd edn. University of Chicago Press, Chicago. First published in 1962
- Lakatos I (1978) Philosophical papers. Vol. 1, the methodology of scientific research programmes. Cambridge University Press, Cambridge
- Lakatos I, Musgrave A (eds) (1970) Criticism and the growth of knowledge: volume 4. Proceedings of the International Colloquium in the Philosophy of Science, London, 1965. Cambridge University Press
- Lee Y, Kozar KA, Larsen KRT (2003) The technology acceptance model: past, present, and future. *Commun Assoc Inf Syst* 12(September):752–780
- Lievrouw LA, Livingstone S (eds) (2006) Handbook of new media: social shaping and social consequences of ICTs. Updated. Student edition. Sage, London
- Lin CA (1996) Looking back: the contribution of Blumler and Katz's uses of mass communication to communication research. *J Broadcast Electron Media* 40(4):574
- McKay J, Marshall P (2001) The dual imperatives of action research. *Information Technology & People* 14(1):46–59
- McMillan SJ (2006) Exploring models of interactivity from multiple research traditions: users, documents and systems. In: Lievrouw LA, Livingstone S (eds) *Handbook of new media: social shaping and social consequences of ICTs*. Sage, London, pp 205–229
- Mead GH (1972/1934) In: Morris CW (ed) *Mind, self, and society: from the standpoint of a social Behaviorist*. University of Chicago Press, Chicago
- Murdock G (2012) Media, culture, and modern times: social science investigations. In: Jensen KB (ed) *A handbook of media and communication research: qualitative and quantitative methodologies*, 2nd edn. Routledge, New York, pp 49–66
- Nardi BA (ed) (1996) Context and consciousness: activity theory and human-computer interaction. MIT Press, Cambridge
- Nowotny H, Scott P, Gibbons M (2001) Re-thinking science: knowledge and the public in an age of uncertainty. Polity Press, Cambridge
- Orlikowski WJ (1992) The duality of technology: rethinking the concept of Technology in Organizations. *Organ Sci* 3(3):398–427
- Peng T-Q, Zhang L, Zhong Z-J, Zhu JJH (2012) Mapping the landscape of internet studies: text Mining of Social Science Journal Articles 2000–2009. *New Media Soc* 15:644–664

- Petras JW, Meltzer BN (1994) Theoretical and ideological variations in contemporary interactionism. In: Reynolds LT, Herman NJ (eds) *Symbolic interaction: an introduction to social psychology*. AltaMira Press, New York, pp 55–63
- Rice RE, Fuller RP (2013) Theoretical perspectives in the study of communication and the internet. In: Dutton WH (ed) *The Oxford handbook of internet studies*. Oxford University Press, Oxford, pp 353–377
- Rice RE, Haythornthwaite C (2006) Perspectives on internet user: access, involvement and interaction. In: Lievrouw LA, Livingstone S (eds) *Handbook of new media: social shaping and social consequences of ICTs*. Sage, London, pp 92–113
- Rogers EM (1999) Anatomy of the two subdisciplines of communication study. *Hum Commun Res* 25(4):618–631
- Rogers EM (2003/1962) *Diffusion of innovations*, 5th edn. Free press, New York
- Rossi C, Bonacorsi A (2005) Intrinsic vs. extrinsic incentives in profit-oriented firms supplying open source products and services. *First Monday* 10(5). <http://journals.uic.edu/ojs/index.php/fm/article/view/1242>
- Ruggiero TE (2000) Uses and gratifications theory in the 21st century. *Mass Communication & Society* 3(1):3–37
- Ryan RM, Deci EL (2000) Intrinsic and extrinsic motivations: classic definitions and new directions. *Contemp Educ Psychol* 25(1):54–67
- Schmitz J, Fulk J (1991) Organizational colleagues, media richness, and electronic mail a test of the social influence model of technology use. *Commun Res* 18(4):487–523
- Selg H (2014) Researching the use of the internet – a beginner's guide. Uppsala Dissertations from the Faculty of Science and Technology, no. 109. Acta Universitatis Upsaliensis, Uppsala
- Short J, Williams E, Christie B (1976) *The social psychology of telecommunications*. Wiley, London
- Skinner BF (1963) Operant Behavior. *Am Psychol* 18(8):503–515
- Smelser NJ (1968) Essays in sociological explanation, Prentice-hall sociology series. Prentice-Hall, Englewood Cliffs
- Steinfield C (1992) Computer-mediated Communications in Organizational Settings Emerging Conceptual Frameworks and Directions for research. *Manag Commun Q* 5(3):348–365
- Suchman LA (1987) Plans and situated actions: the problem of human-machine communication. Cambridge University Press, Cambridge
- Tomasello TK, Lee Y, Baer AP (2010) 'New media' research publication trends and outlets in communication, 1990-2006. *New Media Soc* 12(4):531–548
- Trevino LK, Lengel RH, Daft RL (1987) Media symbolism, media richness, and media choice in organizations a symbolic interactionist perspective. *Commun Res* 14(5):553–574
- Turner BS (1991) Preface to the new edition. In: Parsons T (ed) *The social system*. Routledge, London, pp xiii–xxxi
- Van Dijk J (2006) *The network society: social aspects of new media*, 2nd edn. Sage, London
- Venkatesh V, Bala H (2008) Technology acceptance model 3 and a research agenda on interventions. *Decis Sci* 39(2):273–315
- Walther JB (1992) Interpersonal effects in computer-mediated interaction a relational perspective. *Commun Res* 19(1):52–90
- Walther JB, Anderson JF, Park DW (1994) Interpersonal effects in computer-mediated interaction a meta-analysis of social and antisocial communication. *Commun Res* 21(4):460–487
- Watson JB (1929) *Psychology from the standpoint of a Behaviorist*. 3. Ed. rev. J.B. Lippincott, Philadelphia
- Weber M (1947) *The Theory of Social and Economic Organization*. Edited by Talcott Parsons. Translated by a. M. In: Henderson. Free press, New York
- Whitley R (1984) *The intellectual and social Organization of the Sciences*. Clarendon, Oxford
- Yurdusev AN (1993) Level of analysis' and 'unit of analysis': a case for distinction. *Millennium - Journal of International Studies* 22(1):77–88



Affect and the Expression of Emotions on the Internet: An Overview of Current Research

29

Javier Serrano-Puche

Contents

Introduction	530
Affect and Internet Research: Key Questions and Methodological Issues	532
Frameworks in the Study of Emotions on the Internet	534
Affordances and Emotional Dynamics on Social Networking Sites	536
Emotions as a Driver of News Sharing and Virality	537
Protests in the Emotional Public Sphere	540
Conclusion and Future Directions	541
Cross-References	542
References	542

Abstract

The Internet has become an everyday space for social interaction. On it, users not only access and exchange information but also find a place for the expression of the affective dimension, which is part of human nature. In keeping with the “affective turn” found in the social sciences in the last decade, the Internet has also been studied in the academic world from the prism of emotions. This chapter maps out the research field in which the Internet and emotions converge and presents an overview of relevant literature. It brings together very different approaches, both at the disciplinary level (with contributions from computer science, psychology, and communication studies, e.g.) and at the methodological level with a range of qualitative and quantitative techniques for measuring digital emotions. All in all, the result is a vibrant, complex, and interdisciplinary area of study. It includes, among other topics, the affordances of social networks for emotional expression, the role of the emotions in the act of sharing news and in

J. Serrano-Puche (✉)

Institute for Culture and Society, University of Navarra, Pamplona, Spain

e-mail: jserrano@unav.es

content going viral, and the importance of emotional activation for digital users organizing and participating in social movements.

Keywords

Emotions · News sharing · Virality · Social movements · Affordances · Social networking sites · Facebook · Twitter

Introduction

Almost 50 years after the dawn of the Internet and almost 30 years since the World Wide Web emerged, it is indisputable that the Internet has become more than a mere channel of information and that its importance in everyday interactions is on the rise. From this point of view, the Internet and its applications are not so much seen as a tool that we use as a place of experience and subjectivation. More than a means of communication, it is a space that we inhabit. Thus, the consolidation of cyberspace as a daily communicative environment in people's lives reveals the need to revise the distinction between the real world and the virtual world (Papacharissi 2005). Except for the absence of corporality, which accompanies relationships in the physical world, the interactions that occur digitally are as real as those that happen in other places.

Today, people relate to one another in both offline and online environments, and social relationships are hybridized between both contexts. In this sense, digital mediations actually revolve around remediation (Bolter and Grusin 2000), that is, around ways of remediating interactions, practices, and forms of communication that were already mediated (by language, writing, gestures and accents, personal appearance, etc.). In other words, mediations do not just arise in the digital world; rather, all communication, in some way, is mediated.

Realizing that the Internet is a space for social interaction implies that it facilitates the expression of intellectual, as well as affective, human capacities. Thus, along with the clear potential that the Internet presents for information acquisition and cognitive development, the Internet is also an "affective technology" in the sense that it is a channel for the expression of emotions. It allows us to affix emotions, transforming them into "digital inscriptions" (Lasén 2010), into objects that can be stored, managed, displayed, compared, shared, etc. This is especially true for the digital devices that give us access to the Internet; indeed, they have become "archives of feelings," i.e., "repositories of feelings and emotions, which are encoded not only in the context of the texts themselves but in the practices that surround their production and reception" (Cvetkovich 2003, p. 7).

Although personal interactions today are both face-to-face and held in the digital realm, it is clear that the latter has its own peculiarities, which, in turn, affects users' emotional dimension. On the one hand, traditional social life, which is slower and physically rooted (with spaces and times that are internally differentiated), coexists with digital social life on the other hand, which is characterized by speed and geographic displacement. They therefore have two different spatiotemporal regimes,

which correspond with different emotional regimes (Reddy 2001), that is, the set of norms, rituals, styles, and collective modes that frame which emotions are relevant to a social group and how they should be expressed and managed.

Thus, while the traditional regime is a regime of emotional quality, the technological emotional regime is above all a regime of emotional intensity in which the amount of emotion matters (González 2013). As Caro Castaño (2017) argues, “the expression of emotions and affinities in social networks has intensified in these spaces under a quantifying perspective, where qualitative categories (affections, for example) have been translated into quantifiable measures (e.g., how many likes, re-tweets)” (p. 23). Since social relationships are hybridized between face-to-face and digital interactions, the coexistence of both emotional regimes generates interferences between the emotional logics that correspond to each. This coexistence also engenders a broad and complex scope of analysis about digital technology and emotions since any inquiry must attend to the implications derived from it both in physical and in the digital world.

The Internet’s capacity as a space for the upwelling and expression of emotion, and the parallel academic interest in this question, can be framed in a broader phenomenon that emerged in the academic world during the last decade. According to Clough and Halley (2007), there has been an “affective turn” in the sense that emotions have become more relevant as an object of study in the humanities and social sciences, revealing, at the same time, their centrality in social life. Advances in neuroscience, which have pointed out the role the emotions play in mental processes and their central role in the development of brain functions, are also noteworthy. There are, therefore, several theoretical approaches to the affective dimension and the emotions that are conceptualized and explained both from sociocultural and neurobiological approaches. The complex reality of this facet of human nature makes it an object of interdisciplinary study, but, to date, there is no comprehensive view capable of bringing together and integrating the various disciplines that analyze it (these disciplines include political science, sociology, linguistics, computer science, and clinical psychology, among others).

There is also little conceptual and terminological consensus about the phenomena included here, including affect, emotions, feelings, and passions. While this debate far exceeds this chapter’s aim (see Batson et al. 1992; Solomon 2003; Wetherell 2012), suffice it to say that herein we follow Shouse’s definition that “feelings are *personal and biographical*, emotions are *social*, and affects are *prepersonal*” (2005). Feelings are sensations contrasted with past and identified experiences. Emotions are also personal, but they are conditioned by social and cultural conventions. For this reason, they are often subjected to strategies of control and emotional work in their expression (Hochschild 1979). For its part, affect is more abstract and general and relates to unintentional aspects.

Taking into account the above, this chapter aims is to provide a current map of research about the Internet and emotions within the scope of communication studies and, in so doing, to reveal the main areas of analysis and the fundamental theoretical and methodological issues related to this field of study. It presents a state of the question through an exhaustive literature review, which includes the academic

literature that explicitly studies the emotions in relation to the Internet, i.e., the new sphere of socialization and emotional upwelling.

Because it goes beyond the scope of this chapter, it has not been included material on people's emotional connection with digital technology in general (Shank 2014) or the different devices used to access it, especially mobile phones (Serrano-Puche 2015). However, this line of inquiry is undoubtedly related because said devices have become a constant companion such that sensory contact with them prompts an affective relationship, which then extends to the online environment. As Garde-Hansen and Gorton point out, "ICTs and media technologies are more than ever touched, felt, held, worn, caressed, pressed, thumbed, dropped, scratched, protected, stolen, remembered, and forgotten within the affective economy of pervasive and ubiquitous computing" (2013, p. 42).

Affect and Internet Research: Key Questions and Methodological Issues

The increasing importance of the affective dimension in social life and in academic research, together with the role that the Internet has acquired in everyday interactions, has resulted in a fertile and diverse research field. This is so in terms of the theoretical frameworks and methodologies used, as well as in terms of the themes, emotions, social groups, and specific digital environments that studies and publications to date focus on.

Thus, analyzing the Internet as a space in which emotions are activated and expressed encompasses many different phenomena, and studies from different disciplines converge on this topic. The Internet is an exceptional laboratory for the analysis of emotions because, on the one hand, it offers a lot of diverse communication (of all types and from a huge and diverse group of people), most of which corresponds to emotional communication (Döveling et al. 2010). On the other hand, communication therein is recorded and often includes metadata, such as time and location, or other demographic information, such as the author's gender, age, and type of online behavior. Social networks are particularly ripe for analysis given their affordances, that is, the properties of a platform that are compatible with and relevant to people's interactions. Following Boyd (2010), there are four affordances that sites like Facebook, Twitter, or Instagram offer and that contribute to the configuration of "networked publics," including persistence (online expressions are automatically recorded and archived), replicability (content made out of bits can be duplicated), scalability (the potential for visibility of content in networked publics is high), and searchability (content in networked publics can be accessed through searches). In addition, according to Kwak et al., "Twitter with its open API to crawl, one-sided nature of relationship, and the retweet mechanism to relay information offers an unprecedented opportunity for computer scientists, sociologists, linguists, and physicists to study human behavior" (2010, p. 600).

From a methodological point of view, how emotions emerge and are measured on the Internet defines the debate around the affective dimension online and is a fundamental issue for both communication studies and in other disciplines (Boehner et al. 2007; Küster and Kappas 2014). Broadly speaking, there are three main areas for measuring emotions, each of which requires its own methods and reveals a different facet of the intersection between the Internet and emotions:

First, we can investigate large amounts of emotional content readily available online (through qualitative or quantitative content and data analysis). Second, we can inquire into the subjective emotional experience of users (using self-reporting, through interviews or questionnaires). And third, we can record bodily responses indicating emotional states in real-time Internet use. (Benski and Fisher 2014, p. 8)

Another recurring theme that is also based on the current hybridization of social relations concerns the similarities and differences between the expression of emotions in face-to-face relationships (F2F) and in relationships mediated by digital technology (CMC). As for emotional expression in computer-mediated interactions, we must start by observing the peculiarities of the digital environment, where, for example, the corporality that accompanies face-to-face relationships does not exist and communication between the participants is not necessarily synchronous.

Given that affection is an embodied experience and that it is more difficult to control emotions face-to-face, the absence of both factors could lead one to think that the digital environment is emotionally cold and that it hinders or limits the expression of emotions. However, in a large literature review on this issue, Derkx et al. conclude that “CMC is not characterized by a lack of emotions, on the contrary, [...] positive emotions are expressed to the same extent as in F2F interactions, and that more intense negative emotions are even expressed more overtly in CMC” (2008, p. 780). Boyns and Loprieno (2014) also argue that in the digital realm, although it is disembodied, there is a parasocial presence that enables emotional expression and is supported by two illusions made possible by digital technology, including an illusion of intimacy and an illusion of non-mediation.

When technology-mediated interaction is textual rather than visual (and therefore lacks nonverbal cues, which undoubtedly enrich the expression and interpretation of the affective dimension), Internet users can ease said absence through the use of emoticons (Jibril and Abdullah 2013). If digital interaction takes place through video, and mutual facial recognition therefore is in play, the expression and interpretation of emotions is in principle easier (Kappas and Krämer 2011). In fact, each technological device, application, or channel of communication has a particular “affective bandwidth” (Picard 1997, p. 57), that is, it allows a certain amount of emotional information to pass through. As Lasén has pointed out, “this is a particular kind of information that not only concerns the kind of feeling or emotion but also the shades, degrees, the emotional tonality of the exchange and the affective state of the participants” (2010, p. 146).

In this same sense, the Internet in turn encompasses different socio-technical environments that allow emotions to surface to a greater or lesser extent. Thus, the

affective dimension is not equally revealed in all interactions and communicative situations that take place on the Internet. There are, therefore, some “emotional factors” (Gómez Cabranes 2013 p. 219–223), such as:

- The expressive possibilities of each environment (a blog, a chat, a particular social network, etc. are all different).
- The topics and themes around which the interaction revolves.
- The context and reason for connecting.
- Users’ degree of anonymity or self-disclosure in interactions.
- The time or frequency with which users connect to the digital realm.

Thus, although the digital emotional regime is a regime of emotional intensities, they are not equally observed in all of the digital realm’s uses and environments but rather are conditioned by the factors mentioned above, among others.

Frameworks in the Study of Emotions on the Internet

As pointed out in the introduction, this chapter aims to map out the research field on the Internet and emotions within the discipline of communication studies. For this reason texts that approach the topic from other disciplines, such as engineering, linguistics, or psychology, will only be briefly mentioned in what follows.

Among these other contributions, the importance of “affective computing” stands out because computer science, psychology, and cognitive science converge and because it investigates how to design systems and devices capable of recognizing, interpreting, and even simulating emotions in order to improve interactions between people and computers (see Picard 1997, 2003). Its applications take different forms (wearables, robots and chat bots, software, etc.) and are used in diverse areas, including entertainment and learning systems, simulators, surveillance tools, and applications for the work environment (Peter and Beale 2008). It includes a continuous attempt to better imitate humanity, not only by making devices and interfaces “smarter” but also – albeit illusorily – more affective and emotional. “This process of anthropomorphization to which machines are subjected is the proof of how much human beings invest symbolically and emotionally in them” (Vincent and Fortunati 2009, p. 2).

In addition, computational linguistics increasingly focuses on “sentiment analysis,” that is, the emotional weight transmitted by the messages digital users publish according to different variables, including polarity (indicates if the message has a positive, negative, or neutral feeling), strength (provides a numerical value in relation to the intensity of feeling), and emotion (identifies the predominant emotion in the text analyzed: joy, sadness, anger, etc.) (Bravo-Marquez et al. 2014). The enormous volume of text that is usually analyzed in this research – focused mainly on social networks like Twitter (Pak and Paroubek 2010) or Facebook (Ortigosa et al. 2014) – requires tools capable of automatically processing these messages without losing reliability. Generally, two types of techniques are used. The first one

is based on supervised learning methods (such as support vector machines) and requires integrating tools from natural language processing, taking a classified corpus as a starting point. The second type uses dictionaries of polarity in which well-known tools such as SentiStrength are used.

On the other hand, psychology often poses questions that deal with the effects and emotional consequences of frequent Internet use. Some topics analyzed include the relationship between intensity of network use and self-esteem (Valkenbur et al. 2006; Gonzales and Hancock 2011; Tazghini and Siedlecki 2013), the dissonances between online and offline presentations of the self (DeAndrea and Walther 2011), or the tendency toward narcissism among young users (Buffardi and Campbell 2008; Ong et al. 2011). Often, the conclusions of these studies point to the Internet's net positive or negative impact on people, as if it were a one-dimensional construct. However, given the variety and complexity of Internet-related activities, it seems clear that different ways of using the Internet present their own potential to harm and/or benefit users psychologically and emotionally.

Turning our focus now to media and communication studies, it is clear that the uniqueness of the Internet as an object of study in relation with the emotions has led to abundant and diverse academic literature. There are a variety of approaches to this object of study. For example, some authors focus on the analysis of a particular emotion as follows:

- Empathy, including online communities around health issues in Greece and Ghozati (2001) and producing videos on YouTube in solidarity with external tragedies (see Pantti and Tikka 2014)
- Annoyance, which children and adolescents confess when encountering inappropriate content on the Internet: Livingstone et al. (2013)
- Envy or jealousy when reading status updates on Facebook: Muise et al. (2009); Sagioglou and Greitemeyer (2014)
- Resentment, from workers with precarious employment who vent in forums, in Risi (2014)
- Hope, which fuels interactions on dating websites (see Fürst 2014)
- Enthusiasm, which precedes protest organization in times of political turbulence, in Gerbaudo (2016)
- Anger, which is a dominant framework in political discussions and media coverage of populist leaders (Wahl-Jorgensen 2017)
- Hatred, which is often reinforced by the Internet's anonymity: Perry and Olsson (2009)
- The feeling of grief expressed on Facebook memorial pages: Walter et al. (2011/2012); Jakoby and Reiser (2014); Klastrup (2015)

Studies on the search for affective relationships through the Internet are also important to highlight (Ben-Ze'ev 2004; Kaufmann and Macey 2012). Dating and romantic websites are strongly tied to emotions, perhaps more so than any other form of digitally mediated interaction. The process of searching for a partner, including when that process is face-to-face, opens up a wide range of varied

emotions – from excitement and nerves when registering on a website, to hope before a date, mixed with fear of intimacy or rejection and the desire for attraction, to suspicion about the authenticity of the other user's profile (Bridges 2012). All this is framed, as Illouz (2007) explained, in “emotional capitalism,” which appropriates affection to the point of marketing intimate life, transforming the emotions into commodities subject to the logics of the market and its dynamics of supply and demand, competition, negotiation, and exchange.

Within the research related to emotions and the Internet, another group of texts focuses on the expressive capacities and conditions of certain channels or communication platforms, such as Skype (Chiyoko King-O'Riain 2014) email (Kato et al. 2007; Byron 2008) and social networks such as Facebook (Lin et al. 2014). Others, however, focus their interest on certain groups whose online activity exhibits a heavy emotional weight, such as feminists (Reestorff 2014; Shaw 2014), political activists (Knudsen and Stage 2012; Schuschke and Tynes 2016), adolescents (Blumberg et al. 2016), and immigrants (Fortunati et al. 2012).

From the point of view of the theoretical framework adopted herein, digital emotions have been approached from cultural studies (Karatzogianni and Kuntsman 2012), audiovisual communication studies (Garde-Hansen and Gorton 2013), digital literacy (Moeller et al. 2012), political communication (Wahl-Jorgensen 2013), journalism studies (Rosas 2015; Valenzuela et al. 2017), the domestication of technology (Schofield Clark 2014), risk studies (Roeser 2010), audience studies (Días and Jorge 2016), and queer theory (Cefai 2014).

Within the wide range of topics that have been studied in this field of research, the following sections briefly examine three prominent areas, including the expressive and emotional dynamics enabled by the affordances of social networks, emotions as an underlying component in the process of news sharing and virality (on a massive scale as well) and, finally, the emotions as a mobilizing factor in protests and processes of political change.

Affordances and Emotional Dynamics on Social Networking Sites

As indicated in the introduction, recognizing the capabilities of the digital domain as a space and channel for the expression of emotions means seeing the Internet and its applications as more than an instrument we use; it means recognizing it as a place for socialization that impinges upon and shapes identity. More than a channel of communication, it is a space that we inhabit. In Deuze's words, “we do not live *with*, but *in*, media” (2012, p. XIII). In addition, the online emotional atmosphere means that interaction with others often does not contain an exchange of relevant information but rather the development of communication that is aimed at preserving social contact (Miller 2008).

Though not exclusive to social networks, this is especially evident therein because they are precisely designed to create and maintain connections with others, making these sociability platforms one of the most representative samples of the Internet's communicative possibilities. When it comes to the emotions, their design

is not an innocuous decision-making process because they condition users' expressive capacity. Such is the case, for example, of Facebook and its Like button. The implications derived from social networks' emotional architecture go further since, as Peyton (2014) indicates, with this button the notion of "liking" has undergone a semiotic change since taste has shifted from individuals' intimate and emotional sphere into the public sphere. More than a feeling, it becomes an action since "instead of being tied to an internal sensation that reacts tacitly to an external stimulus, to 'like' now becomes a conscious rationalized action that connotes an external tag of connection between an individual, a discursive element, and a social stance" (Peyton 2014, p. 113).

Implications thereof also extend to economics, giving rise to what has been called the "Like economy" since the social web has become a recentralized, data-intensive infrastructure. In it, "the social is of particular economic value, as user interactions are instantly transformed into comparable forms of data and presented to other users in a way that generates more traffic and engagement" (Gerlitz and Helmond 2013, p. 1349).

Within the digital sphere, the emotional dimension is intimately linked to the configuration of personal identity. On social networks, this is seen in how users manage recognition dynamics and reputation among their contacts because, as Svensson points out, "the more someone links to you, likes you, thumbs up your postings, and comments on them, etc., the higher you will be ranked and listed in the different SNS, news feeds, and tables of suggested links and readings (...) That increase in status is linked to feelings of satisfaction and well-being. Indeed, positive emotions emerge when individuals are able to reaffirm their self-conceptions" (Svensson 2014, p. 22).

Emotions are used, in this sense, as resources in users' identity work, in a digital medium marked by interconnectivity. This medium also makes it impossible for users to reaffirm their self-concept without it being visible to others. For this reason, "leaving multiple traces of yourself on socially networked media sites is seen as a necessary goal –and interacting with such sites is made pleasure or desirable in part because they work to produce and maintain positive affective relations with their users, to set up affective feedback loops that make one want to proliferate one's media transactions" (Grusin 2010, p. 4–5). Users' most common actions, as shown below, include sharing content on social networks.

Emotions as a Driver of News Sharing and Virality

In 2011, scholars from the Pew Research Center claimed that "if searching for news was the most important development of the last decade, sharing news may be among the most important of the next" (Olmstead et al. 2011, p. 10). In fact, the act of sharing has become a dominant pattern in digital consumption habits, along with other activities such as monitoring, checking, snacking, scanning, and clicking (Costera Meijer and Groot Kormelink 2015). Moreover, as Nicholas A. John points out in his book *The Age of Sharing* (2016), sharing is a complex contemporary

keyword. It embodies positive values such as empathy, communication, fairness, openness, and equality. But it is also a model of economic behavior that camouflages commercial and even exploitative relations (e.g., websites that sell users' data to advertisers).

The digital environment promotes news sharing, that is to say, "the practice of giving a defined set of people access to news content via social media platforms, as by posting or recommending it" (Kümpel et al. 2015, p. 2). According to Cappella et al. (2015), people are motivated to share content for two reasons: on the one hand, psychological factors associated with the user and, on the other hand, the message's content. Both tend to have, to a greater or lesser extent, an affective dimension. Harber and Cohen (2005) also argue in their Emotional Broadcaster Theory (EBT) that people have an inner need to share with others experiences and news stories – especially ones that are emotionally moving.

Among the motivations that drive users toward news sharing, researchers point to three categories, including self-serving motives, altruistic motives, and social motives. The latter refers to the attempt to gain a reputation among other users and the pursuit of entertainment (Ma et al. 2011). The second motive is related to the desire to offer valuable content to other users and to show that you care about them. As Guadagno and colleagues explains "when people watch Internet video clips, they may experience the same emotions as the people in the clips, and by forwarding that clip, they anticipate that the receiver will experience similar emotions" (2013, p. 2312). Social motives include getting approval from others, seeking affective rewards, and integrating and belonging to a group (Lee and Ma 2012). In some ways, these motivations converge in that the core functions of sharing are "to express ourselves in positive ways and to strengthen our social bonds" (Scholz et al. 2017, p. 2881).

With regard to the content of the messages, there are two variables that influence the likelihood that they will be shared: valence and arousal. On the one hand, studies emphasize that messages with a positive valence are shared more. In other words, news content that elicits positive or pleasant feelings is more likely to spread than negative and neutral content (Berger and Milkman 2012). Experts from advertising and marketing have especially researched this topic (Dobele et al. 2007; Eckler and Bolls 2011; Nelson-Field et al. 2013; Dafonte 2014); therein, they agree that generating emotions – among them, they highlight surprise and joy – is required for a video to be shared in the digital environment. However, one must also take into account "arousal," that is, the level of emotional impact that content can generate. Items that involve a higher level of arousal – regardless of whether the content is positive or negative – correlate positively with the probability of being shared (Berger 2011). Emotional intensity as a variable therefore increases the likelihood of news sharing.

The notion of news sharing is linked to that of content virality, which can be defined as a property of content that enhances its likelihood of being shared by a multitude of users on different social media (Heimbach et al. 2015). Virality, understood as the probability of a message being propagated, is made up of three dimensions according to Alhabash and McAlister (2015). Along with reach (e.g.,

volume of online sharing, forwarded messages, posts, and reposts), evaluation (e.g., number of likes, favorites), and deliberation (e.g., comments) should be taken into account.

In relation to virality, the increasing attention given to memes – that is, the images, videos, and contagious ideas that circulate through the Internet – mobilizes users' emotions both horizontally (through social networks, principally) and vertically, when traditional media (television, radio, newspapers) echo memes' emotional resonance. Scholarly analysis has focused on understanding and trying to predict the dissemination process of this type of content (Shifman 2013; Spitzberg 2014).

The study of emotional transmission among digital users is also an area for fertile research. Since sharing emotions is essential for the creation and maintenance of social bonds, the status of social networks revolves around the emotions and feelings that users express about themselves therein. At the same time, those emotions are echoed in users' contact circles.

In an experiment conducted by researchers at the universities of California and Cornell, with the help of Facebook programmers, the feeds of 690,000 users were manipulated for a week. One group of users received positive news, while another group was provided with news loaded with negative connotations. One of the conclusions was that people who observe less negative stories in their feed are less likely to write a negative message (and vice versa): "When positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred" (Kramer et al. 2014, p. 8788). The study indicates that the emotions expressed by others on Facebook influence users' emotions and that face-to-face meetings are not required for emotional transmission to occur.

Another piece of research analyzed the Facebook status updates of about one million users during a period of more than 2 years; it found that both negative and positive publications had some impact on other members of users' social circles. The peculiar thing in this research is that, starting from the premise that atmospheric phenomena can influence one's mental state, they analyzed the correlation between meteorology in different cities and resident users' status updates, proving that on rainy days the number of posts on Facebook containing positive expressions fell by 1.19%, while negative messages increased by 1.16%. According to the authors, "for every one person affected directly, rainfall alters the emotional expression of about one to two other people, suggesting that online social networks may magnify the intensity of global emotional synchrony" (Coviello et al. 2014).

In research on emotional transmission on Twitter, Ferrara and Yang (2015) identified two different types of individuals: those highly susceptible to emotional transmission and those less susceptible. Highly susceptible users are significantly less inclined to adopt negative emotions than the less susceptible ones but are equally likely to adopt positive emotions. According to the researchers, the probability of adopting positive emotions is much greater than that of negative emotions. In short, research on this subject agrees that when deciding on an update, users are influenced by what is happening with their contacts.

Protests in the Emotional Public Sphere

Traditionally, research on political participation has been framed in the Habermasian idea of the public sphere as a space for rational deliberation. In that sense, the emotions were not considered central in the process of forming public opinion and in citizen participation.

However, as Dahlgren argues, “the rationalist bias tends to discount a wide array of communicative modes that can be of importance for democracy, including the affective, the poetic, the humorous, the ironic, and so forth” (2005, p. 156). The works of Jasper (1998, 2011) and Goodwin et al. (2001), among others, have reevaluated the role of emotions in politics and social movements. Today, it is common to speak of an “affect effect” regarding the way emotions interact with political decision-making (Neuman et al. 2007). Moreover, the features of an “emotional public sphere” (Richards 2009) are relevant since they emphasize the affective dimension of civic and political life where emotions are not considered as simple instances of human irrationality but rather as part of citizens’ affective experience in public life.

In the digital domain, “networked publics” are configured, namely, “publics that are restructured by networked technologies,” and therefore are simultaneously “(1) the space constructed through networked technologies and (2) the imagined collective that emerges as a result of the intersection of people, technology and practice” (Boyd 2010, p. 39). The particularity of Internet, as Papacharissi asserts, is that “networked digital structures of expression and connection are overwhelmingly characterized by affect” (2015, p. 8). The Internet contributes to the emotionalization of the public sphere. In particular, social networks were built not so much to circulate information but rather as a key means for motivating and mobilizing citizens. Through messages from Facebook, tweets, and post blogs, protest organizers “have condensed individual sentiments of indignation, anger, pride and a sense of shared victimhood and transformed them into political passions driving the process of mobilization” (Gerbaudo 2012, p. 14). Hence, “networked publics” are “affective publics,” that is, “networked public formations that are mobilized and connected or disconnected through expressions of sentiment” (Papacharissi 2015, p. 126).

This dynamic is clearly seen in social movements. In an analysis of the mobilization on Facebook prior to protests in Egypt and Spain in 2011, Gerbaudo identifies “moments of digital enthusiasm as necessarily transient phases of intense, positive emotional mood emerging in political online conversations in proximity to major protest events” (Gerbaudo 2016, p. 255). In them, interactions between Facebook page managers and users took the form of a positive, self-reinforcing feedback loop. Users redoubled the messages put forward by administrators through likes, shares, and comments of support. These, in turn, led to more positive and hopeful messages from administrators in an upward emotional spiral, which served as a prelude to actual demonstrations. Similarly, analyzing the 2013 protests against a coup within the Czech Social Democratic Party, Švelch and Štětka conclude that “as people tend to gather on Facebook to express their feelings, social media become a primary

conduit for emotional protest, which can be subsequently taken to the streets” (2016, p. 1).

On Twitter, in addition, the timeline around certain events of a political or social nature is an amalgam of information, opinion, interpretation, and emotions, repeated and amplified by the network itself, giving rise to what Papacharissi (2014) describes as an “affective news stream.” As seen in the case study of the resignation of Hosni Mubarak as president of Egypt in February 2011, “prominent and popular tweets were reproduced and endorsed, contributing to a stream that did not engage the reader cognitively, but primarily emotionally. Frequently, the same news was repeated over and over again, with little or no new cognitive input, but increasing affective input” (Papacharissi and Oliveira 2012, p. 278).

Conclusion and Future Directions

The Internet has acquired undeniable relevance as a new field for interpersonal communication, marking a before and after in communicative practices and social interaction (Jordan 2013). People have found in the digital environment a new space for their personal development and socialization, which, with its own peculiarities, adds to the traditional social context. In this sense, and seen from a historical perspective, Western society’s relationship with technology has always had a high emotional component. Since technology is always situated in the realm of novelty, its eruption opens up the question of how the new and old coexist. This process “is played in a binary way between the pole of curiosity, rarity, new risk and uncertainty on the one hand, whilst on the other it includes old habits, stability certainty, security and safety” (Fortunati and Vincent 2009, p. 6). The set of meanings, symbols, and values associated with technology also must be added to this.

The importance of the Internet in daily communicative interactions has garnered interest from the academic community. Approaching it from the point of view of human beings’ affective dimension and of the emotions – understood as a predominant value in contemporary society – allows us to map out a research field that is vibrant, ample, and complex and in which different theoretical and methodological approaches converge. All of them emphasize that the Internet is a space in which users’ affective nature materializes and is expressed.

Whether on the level of personal interactions (with actions such as “liking” or “sharing”) or at the macro level (through large-scale emotional transmission, political mobilization, or viral content), the Internet is not only a channel for the expression of people’s affections but also contributes to molding and amplifying them. The preponderant role of the emotions in our time is clearly revealed in everyday Internet use, which, in turn, reveals how, through technology, emotions influence the way in which users’ identities are configured and manifested.

The confluence of face-to-face and digital interaction (with their own spatiotemporal and emotional regimes), sociocultural practices associated with the use of the

web (along with technical, legal, and market conditions), and the peculiarities of computer-mediated interactions versus face-to-face meetings are some of the issues that relevant studies focus on and that still require further research. It would be especially interesting to delve into the motivations that drive users to share content on social networks and the emotional springs that underlie social movements. This is even more important given the current degradation of the public sphere with phenomena such as fake news, echo chambers, and filter bubbles. On the other hand, and from the methodological point of view, researchers have yet to meet the challenge of combining qualitative and quantitative techniques to measure and compare emotions in the offline and online worlds.

Lastly, and from a broader point of view, areas of interest for future research on the study of emotions in the use of digital technology include the increasing extent of the so-called Internet of Things that makes the presence of technology in everyday life more ubiquitous; the emergence of sophisticated wearable devices, which is a further step in adapting technology to and integrating it with the user; and advances in the design of social robots (facilitating more natural interaction with humans).

Cross-References

- ▶ [Affective Flux of Feminist Digital Collectives, or What Happened to the Women's March of 2017](#)
 - ▶ [Digital Activism Within Post-Fordism: Interventions Between Assimilation and Exclusion](#)
 - ▶ [Researching Affordances](#)
-

References

- Alhabash S, McAlister AR (2015) Redefining virality in less broad strokes: predicting viral behavioral intentions from motivations and uses of Facebook and Twitter. *New Media Soc* 17:1317–1339
- Batson C, Shaw L, Oleson K (1992) Differentiating affect, mood, and emotion: toward functionally based conceptual distinctions. *Personal Soc Psychol Rev* 13:294–326
- Benski T, Fisher E (2014) Introduction: investigating emotions and the Internet. In: Benski T, Fisher E (eds) *Internet and emotions*. Routledge, New York, pp 1–14
- Ben-Ze'ev A (2004) *Love online. Emotions on the Internet*. Cambridge University Press, New York
- Berger J (2011) Arousal increases social transmission of information. *Psychol Sci* 22:891–893. <https://doi.org/10.1177/0956797611413294>
- Berger J, Milkman KL (2012) What makes online content viral? *J Mark Res* 49(2):192–205. <https://doi.org/10.1509/jmr.10.0353>
- Blumberg FC, Rice JL, Dickmeis A (2016) Social media as a venue for emotion regulation among adolescents. In: Tettegah SY (ed) *Emotions, technology, and social media*. Elsevier-Academic Press, San Diego, pp 105–116
- Boehner K, DePaula R, Dourish P, Sengers P (2007) How emotion is made and measured. *Int J Hum Comput Stud* 65(4):275–291
- Bolter JD, Grusin R (2000) *Remediation: understanding new media*. The MIT Press, Cambridge, MA

- Boyd D (2010) Social network sites as networked publics: affordances, dynamics, and implications. In: Papacharissi Z (ed) *A networked self: identity, community, and culture on social network sites*. Routledge, New York, pp 39–58
- Boys D, Loprieno D (2014) Feeling through presence: toward a theory of interaction rituals and parasociality in online social works. In: Benski T, Fisher E (eds) *Internet and emotions*. Routledge, New York, pp 33–47
- Bravo-Marquez F, Mendoza M, Poblete B (2014) Meta-level sentiment models for big social data analysis. *Knowl-Based Syst* 69(1):86–99. <https://doi.org/10.1016/j.knosys.2014.05.016>
- Bridges JC (2012) The illusion of intimacy: problems in the world of online dating. Praeger, Santa Barbara
- Buffardi LE, Campbell WK (2008) Narcissism and social networking web sites. *Personal Soc Psychol Bull* 34(10):1303–1314
- Byron K (2008) Carrying too heavy a load? The communication and miscommunication of emotion by email. *Acad Manag Rev* 33(2):309–327
- Cappella JN, Kim HS, Albaracín D (2015) Selection and transmission processes for information in the emerging media environment: psychological motives and message characteristics. *Media Psychol* 18(3):396–424. <https://doi.org/10.1080/15213269.2014.941112>
- Caro Castaño L (2017) Las redes sociales y la cultura de la autopromoción. Apuntes para una teoría de la identidad mosaico. *DOXA Comunicación* 24:13–36
- Cefai S (2014) The lesbian intimate: capacities for feeling in convergent media context. *Participations: J Audience Recep Stud* 11(1):237–253
- Chiyoko King-O'Ria R (2014) Transconnective space, emotions and skype: the transnational emotional practices of mixed international couples in the Republic of Ireland. In: Benski T, Fisher E (eds) *Internet and emotions*. Routledge, New York, pp 131–143
- Clough PT, Halley J (2007) *The affective turn: theorizing the social*. Duke University Press, Durham
- Costera Meijer I, Groot Kormelink T (2015) Checking, sharing, clicking and linking: changing patterns of news use between 2004 and 2014. *Digital Journal* 3(5):664–679. <https://doi.org/10.1080/21670811.2014.937149>
- Coviello L, Sohn Y et al (2014) Detecting emotional contagion in massive social networks. *PLoS One* 9(3):e90315
- Cvetkovich A (2003) *An archive of feelings: trauma, sexuality, and lesbian public cultures*. Duke University Press, Durham
- Dafonte A (2014) The key elements of viral advertising. From motivation to emotion in the most shared videos. *Comunicar* 43:199–207
- Dahlgren P (2005) The Internet, public spheres, and political communication: dispersion and deliberation. *Polit Commun* 22(2):147–162. <https://doi.org/10.1080/10584600590933160>
- DeAndrea D, Walther JB (2011) Attributions for inconsistencies between online and offline self-presentations. *Commun Res* 38(6):805–825
- Derks D, Fischer AH, Bos AER (2008) The role of emotion in computer-mediated communication: a review. *Comput Hum Behav* 24(3):766–785
- Deuze M (2012) *Media life*. Polity Press, Cambridge
- Días P, Jorge A (2016) Audience experiencing of emotions in the contemporary media landscape. *Participations: J Audience Recep Stud* 13(1):431–445
- Dobele A, Lindgreen A, Beverland M, Vanhamme J, Van-Wijk R (2007) Why pass on viral messages? Because they connect emotionally. *Bus Horiz* 50:291–304
- Döveling K, von Scheve C, Konijn E (eds) (2010) *The Routledge handbook of emotions and mass media*. Routledge, London
- Eckler P, Bolls P (2011) Spreading the virus: emotional tone of viral advertising and its effect on for-warding intention and attitudes. *J Interact Advert* 11(2):1–11
- Ferrara E, Yang Z (2015) Measuring emotional contagion in social media. *PLoS One* 10(11): e0142390. <https://doi.org/10.1371/journal.pone.0142390>
- Fortunati L, Vincent J (2009) Introduction. In: Vincent J, Fortunati L (eds) *Electronic emotion. The mediation of emotion via information and communication technologies*. Peter Lang, Bern, pp 1–31

- Fortunati L, Perttierra R, Vincent J (2012) Migration, diaspora and information technology in global societies. Routledge, London
- Fürst H (2014) Emotional socialization on a Swedish Internet dating site: the search and hope for happiness. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 99–112
- Garde-Hansen J, Gorton K (2013) Emotion online. Theorizing affect on the internet. Palgrave Macmillan, Basingstoke
- Gerbaudo P (2012) Tweets and the streets: social media and contemporary activism. Pluto, London
- Gerbaudo P (2016) Rousing the Facebook crowd: digital enthusiasm and emotional contagion in the 2011 protests in Egypt and Spain. *Int J Commun* 10:254–273
- Gerltz C, Helmond A (2013) The like economy: social buttons and the data-intensive web. *New Media Soc* 15(8):1348–1365
- Gómez Cabranes L (2013) Las emociones del internauta. In: Flamarique L, D’Oliveira-Martins M (eds) Emociones y estilos de vida: radiografía de nuestro tiempo. Biblioteca Nueva, Madrid, pp 211–243
- Gonzales AL, Hancock JT (2011) Mirror, mirror on my Facebook wall: effects of exposure to Facebook on self-esteem. *Cyberpsychol Behav Soc Netw* 14(1–2):79–83
- González AM (2013) Introducción: emociones y análisis social. In: Flamarique L, D’Oliveira-Martins M (eds) Emociones y estilos de vida: radiografía de nuestro tiempo. Biblioteca Nueva, Madrid, pp 9–24
- Goodwin J, Jasper JM, Polletta F (eds) (2001) Passionate politics: emotions and social movements. University of Chicago Press, Chicago
- Grusin R (2010) Premediation: affect and mediality after 9/11. Palgrave Macmillan, Basingstoke
- Guadagno RE, Rempala DM, Murphy S, Okdie BM (2013) What makes a video go viral? An analysis of emotional contagion and Internet memes. *Comput Hum Behav* 29(6):2312–2319. <https://doi.org/10.1016/j.chb.2013.04.016>
- Harber KD, Cohen DJ (2005) The emotional broadcaster theory of social sharing. *Journal of Language and Social Psychology*, 24(4):382–400
- Heimbach I, Schiller B, Strufe T, Hinz O (2015) Content virality on online social networks: empirical evidence from twitter, Facebook, and Google+ on German news websites. In: Proceedings of the 26th ACM conference on hypertext & social media. ACM, New York, pp 39–47. <https://doi.org/10.1145/2700171.2791032>
- Hochschild AR (1979) Emotion work, feeling rules and social structure. *Am J Sociol* 85:551–575
- Illouz E (2007) Cold intimacies: the making of emotional capitalism. Cambridge University Press, Cambridge
- Jakoby NR, Reiser S (2014) Grief 2.0: exploring virtual cemeteries. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 65–79
- Jasper JM (1998) The emotions of protest: affective and reactive emotions in and around social movements. *Sociol Forum* 13(3):397–424
- Jasper JM (2011) Emotions and social movements: twenty years of theory and research. *Annu Rev Sociol* 37:285–303
- Jibril TA, Abdullah MH (2013) Relevance of emoticons in computer-mediated communication contexts: an overview. *Asian Social Sci* 9(4):201–207
- John NA (2016) The age of sharing. Polity Press, Cambridge
- Jordan T (2013) Internet, society and culture. Communicative practices before and after the Internet. Bloomsbury, New York/London
- Kappas A, Krämer NC (eds) (2011) Face-to-face communication over the internet: emotions in a web of culture. Cambridge University Press, Cambridge
- Karatzogianni A, Kuntsman A (eds) (2012) Digital cultures and the politics of emotion: feelings, affect and technological change. Palgrave Macmillan, Basingstoke
- Kato Y, Kato S, Akahori K (2007) Effects of emotional cues transmitted in e-mail communication on the emotions experienced by senders and receivers. *Comput Hum Behav* 23(4):1894–1905
- Kaufmann JC, Macey D (2012) Love online. Polity, Cambridge

- Klastrup L (2015) "I didn't know her, but . . .": parasocial mourning of mediated deaths on Facebook RIP pages. *New Rev Hypermed Multimed* 21(1–2):146–164
- Knudsen BT, Stage C (2012) Contagious bodies. An investigation of affective and discursive strategies in contemporary online activism. *Emot Space Soc* 5(3):148–155
- Kramer ADI, Guillory JE, Hancock JT (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proc Natl Acad Sci USA* 111(24):8788–8790
- Kümpel AS, Karnowski V, Keyling T (2015) News sharing in social media: A review of current research on news sharing users, content, and networks. *Social Media + Society*, 1(2):1–14
- Küster D, Kappas A (2014) Measuring emotions in individuals and Internet communities. In: Benski T, Fisher E (eds) *Internet and emotions*. Routledge, New York, pp 48–61
- Kwak H, Lee C, Park H, Moon S (2010) What is Twitter, a social network or a news media? In: Proceedings of the 19th international conference on world wide web. ACM, New York, pp 591–600. <https://doi.org/10.1145/1772690.1772751>
- Lasén A (2010) Mobile media and affectivity: some thoughts about the notion of affective bandwidth. In: Höflich JR et al (eds) *Mobile media and the change of everyday life*. Peter Lang, Frankfurt am Main, pp 131–154
- Lee CS, Ma L (2012) News sharing in social media: the effect of gratifications and prior experience. *Comput Hum Behav* 28:331–339. <https://doi.org/10.1016/j.chb.2011.10.002>
- Lin H, Tov W, Qiu L (2014) Emotional disclosure on social networking sites: the role of network structure and psychological needs. *Comput Hum Behav* 41:342–350. <https://doi.org/10.1016/j.chb.2014.09.045>
- Livingstone S, Kirwil L, Ponte C, Staksrud E (2013) In their own words: what bothers children online? EU Kids Online. London School of Economics & Political Science, London Retrieved from: <http://goo.gl/mpS4Zu0>. Accessed 06 Nov 2016
- Ma L, Lee CS, Goh DH-L (2011) That's news to me: the influence of perceived gratifications and personal experience on news sharing in social media. In: Proceedings of the 11th annual international ACM/IEEE joint conference on digital libraries. ACM, New York, pp 141–144. <https://doi.org/10.1145/1998076.1998103>
- Miller D (2008) New media, networking and phatic culture. *Convergence: Int J Res New Media Technol* 14(4):387–400
- Moeller S, Powers E, Roberts J (2012) "The world unplugged" and "24 hours without media": media literacy to develop self-awareness regarding media. *Comunicar* 39:45–52
- Muisse A, Christofides E, Desmarais S (2009) More information than you ever wanted: does Facebook bring out the green-eyed monster of jealousy? *Cyberpsychol Behav* 12(4):441–444
- Nelson-Field K, Riebe E, Newstead K (2013) The emotions that drive viral video. *Australas Mark J* 21:205–211
- Neuman WR, Marcus GE, MacKuen M, Crigler AN (eds) (2007) *The affect effect: dynamics of emotion in political thinking and behavior*. University of Chicago Press, Chicago
- Olmstead K, Mitchell A, Rosenstiel T (2011) Navigating news online: where people go, how they get there and what lures them away. Pew Research Center. Retrieved from <http://www.journalism.org/files/legacy/NIELSEN%20STUDY%20-%20Copy.pdf>
- Ong E et al (2011) Narcissism, extraversion and adolescents' self-presentation on Facebook. *Personal Individ Differ* 50(2):180–185
- Ortigosa A, Martín JM, Carro RM (2014) Sentiment analysis in Facebook and its application to e-learning. *Comput Hum Behav* 31:527–541
- Pak A, Paroubek P (2010) Twitter as a corpus for sentiment analysis and opinion mining. Proceedings of the seventh conference on international language resources & evaluation (LREC'10). European Language Resources Association (ELRA), Valletta
- Pantti M, Tikka M (2014) Cosmopolitan empathy and user-generated disaster appeal videos on YouTube. In: Benski T, Fisher E (eds) *Internet and emotions*. Routledge, New York, pp 178–192
- Papacharissi Z (2005) The real-virtual dichotomy in online interaction: new media uses and consequences revisited. *Commun Yearb* 29:215–237

- Papacharissi Z (2014) Toward new journalism(s). Affective news, hybridity, and liminal spaces. *Journal Stud*, 1–14. <http://doi.org/w4w>
- Papacharissi Z (2015) Affective publics: sentiment, technology, and politics. Oxford University Press, Oxford
- Papacharissi Z, Oliveira F (2012) Affective news and networked publics: the rhythms of news storytelling on #Egypt. *J Commun* 62(2):266–282
- Perry B, Olsson P (2009) Cyberhate: the globalization of hate. *Inf Commun Technol Law* 18(2):185–199
- Peter C, Beale R (eds) (2008) Affect and emotion in human-computer interaction. From theory to applications. Springer, Berlin/Heidelberg
- Peyton T (2014) Emotion to action?: deconstructing the ontological politics of the “like” button. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 113–128
- Picard RW (1997) Affective computing. The MIT Press, Cambridge, MA
- Picard RW (2003) Affective computing: challenges. *Int J Hum Comput Stud* 59(1–2):55–64
- Preece JJ, Ghozati K (2001) Experiencing empathy online. In: Rice RE, Katz JE (eds) The Internet and health communication: experiences and expectations. SAGE, Thousand Oaks, pp 237–260
- Reddy WM (2001) The navigation of feeling: a framework for the history of emotions. Cambridge University Press, Cambridge/New York
- Reestorff CM (2014) Mediatised affective activism: the activist imaginary and the topless body in the Femen movement. *Convergence: Int J Res New Media Technol* 20(4):478–495
- Richards B (2009) News and the emotional public sphere. In: Allan S (ed) The Routledge companion to news and journalism. Routledge, London, pp 301–311
- Risi E (2014) Emerging resentment in social media: job insecurity and plots of emotions in the new virtual environments. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 161–177
- Roeser S (ed) (2010) Emotions and risky technologies. Springer, New York
- Rosas O (2015) The emotional framing of terrorism in online media: the case of Charlie Hebdo. In: Wassmann C (ed) Therapy and emotions in film and television: the pulse of our times. Palgrave Macmillan, Basingstoke/New York, pp 134–152
- Sagioglou C, Greitemeyer T (2014) Facebook’s emotional consequences: why Facebook causes a decrease in mood and why people still use it. *Comput Hum Behav* 35:359–363
- Schofield Clark L (2014) Mobile media in the emotional and moral economies of the household. In: Goggin G, Hjorth L (eds) The Routledge companion to mobile media. Routledge, New York, pp 320–332
- Scholz C, Baek EC, O’Donnell MB, Kim HS, Cappella JN, Falk EB (2017). A neural model of valuation and information virality. *Proceedings of the National Academy of Sciences*, 114(11):2881–2886
- Schuschke J, Tynes BM (2016) Online community empowerment, emotional connection, and armed love in the black lives matter movement. In: Tettegah SY (ed) Emotions, technology, and social media. Elsevier-Academic Press, San Diego, pp 25–47
- Serrano-Puche J (2015) Emociones en el uso de la tecnología: un análisis de las investigaciones sobre teléfonos móviles. *Observatorio (OBS*)* 9(4):101–112
- Shank DB (2014) Technology and emotions. In: Stets JE, Turner JH (eds) Handbook of the sociology of emotions, vol II. Springer, New York, pp 511–528
- Shaw F (2014) Emotional investments: Australian feminist blogging & affective networks. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 211–224
- Shifman L (2013) Memes in digital culture. The MIT Press, Cambridge
- Shouse E (2005) Feeling, emotion, affect. *J Media Cult* 8:6 <http://journal.media-culture.org.au/0512/03-shouse.php>. Accessed 22 Aug 2014
- Solomon RC (ed) (2003) What is an emotion? Classic and contemporary readings, 2nd edn. Oxford University Press, Oxford
- Spitzberg BH (2014) Toward a model of meme diffusion (M3D). *Commun Theory* 24:311–339

- Švelch J, Štětka V (2016) The coup that flopped. Facebook as a platform for emotional protest. First Monday, 21(1–4). <https://doi.org/10.5210/fm.v21i1.6333>
- Svensson J (2014) Power, identity, and feelings in digital late modernity: the rationality of reflexive emotion displays online. In: Benski T, Fisher E (eds) Internet and emotions. Routledge, New York, pp 17–32
- Tazghini S, Siedlecki K (2013) A mixed method approach to examining Facebook use and its relationship to self-esteem. Comput Hum Behav 29(3):827–832
- Valenzuela S, Piña M, Ramírez J (2017) Behavioral effects of framing on social media users: how conflict, economic, human interest, and morality frames drive news sharing. J Commun 67:803. <https://doi.org/10.1111/jcom.12325>
- Valkenburg PM, Peter J, Schouten AP (2006) Friend networking sites and their relationship to adolescents' well-being and social self-esteem. Cyberpsychol Behav 9(5):584–590
- Vincent J, Fortunati L (eds) (2009) Electronic emotion. The mediation of emotion via information and communication technologies. Peter Lang, Bern
- Wahl-Jorgensen K (2013) Future directions for political communication scholarship: considering emotion in mediated public participation. In: Gates KA (ed) The international encyclopedia of media studies, Media studies futures, vol 6. Blackwell, Oxford, pp 455–478
- Wahl-Jorgensen K (2017) Media coverage of shifting emotional regimes: Donald Trump's angry populism. Paper presented at "populism, post-truth politics and participatory culture: interventions in the intersection of popular and political communication". ICA preconference, 24–25 May 2017, San Diego
- Walter T, Hourizi R, Moncur W, Pitsillides S (2011/2012) Does the internet change how we die and mourn? Overview and analysis. Omega: J Death Dying 64(4):275–302
- Wetherell M (2012) Affect and emotion. A new social science understanding. SAGE, London



Big Data Goes to Hollywood: The Emergence of Big Data as a Tool in the American Film Industry

30

Felix M. Simon and Ralph Schroeder

Contents

Introduction	550
“Big Data,” “Hollywood,” and the Importance of the Opening Weekend	551
Predicting Future Box Office with Big Data	553
Advantages and Limitations	557
Benefits and Tensions of Big Data for Hollywood	560
Conclusion and Future Research	562
References	565

Abstract

Big data techniques are increasingly used in marketing and to inform business decisions. The film industry is one area where big data that analyzes social media is being used to predict the popularity of films and to gauge audience interest. This is also an area where the stakes are high, and there has been extensive research about how to maximize the benefits of publicity and marketing campaigns. This chapter examines the relevant research, focusing on efforts to predict the success of Hollywood blockbusters. These efforts highlight a number of issues in the kind of knowledge that is generated using big data, including the representativeness of the data, the applicability of findings to different contexts, and access to data sources. The chapter weighs some of the advantages and shortcomings of big data in predicting movie success and highlights the tensions in an industry where uncertainty is high but where exceptional attention is paid to individual creativity. The chapter also discusses the implications of these new and powerful ways to make success subject to objective measurement and control.

F. M. Simon · R. Schroeder (✉)

Oxford Internet Institute, University of Oxford, Oxford, UK

e-mail: felixmarvinsimon@gmail.com; ralph.schroeder@oii.ox.ac.uk

Keywords

Big data · Hollywood · Film industry · Prediction · Audiences · Social media

Introduction

The film industry has always spent much effort trying to figure out what audiences want. That is mainly because the stakes are very high: Hollywood thrives on the systematic evaluation of future earnings. For every blockbuster movie success that can sometimes yield hundreds of millions of dollars in profits, there are many more failures that fail to recoup the costs that it took to make and advertise the film. Many techniques have been tried in the past to figure out what audiences want, including focus groups and analyzing the geographies of box-office receipts (Staiger 1990). Yet these efforts were often lacking in timely or easily accessible data. This situation has now changed with the advent of big data from social media which has been used to try to predict box-office receipts and to measure audience response to marketing campaigns and gauge interest in movies before they are released. This chapter analyzes these studies, partly in order to highlight some of the challenges that can be found in this field as in other applications of big data research, such as the representativeness of data and the replicability of findings. Another aim of the chapter is to point to a tension that is perhaps more acute in the film industry than elsewhere, namely, between the industry's self-image as promoting creativity as against the imperative to develop and promote products whose appeal can be precisely calculated.

Big data has come to be of great interest to Hollywood (Hadida 2009) because it promises to provide lots of easily accessible information about what audiences want. Thus there have been a number of attempts to harness big data to yield insights into the potential success of movies. This chapter examines the implications of big data analysis of social media data for the American film industry by reference to several key questions: First, what do current studies and industry reports on big data analytics suggest about the effectiveness of forecasting the box-office success of Hollywood films and in understanding a film's audience? Second, does the effectiveness of big data techniques warrant the use of certain strategies in developing and promoting films? And third, what are the implications of these strategies: can they be expected to lead to a more audience-centric approach or to changing how films are made and marketed? As for the last of these questions, these techniques are still at an early stage, and so it is only possible to present some preliminary ideas. Nevertheless, it will be possible to point to how big data analyses of social media go against the grain of some cherished self-understandings and well-established practices in the movie business.

The chapter will proceed as follows: First, we will present key terms and provide an overview of the literature to date. Next, we will present several exemplary case studies that deal with big data in the context of movie prediction and marketing. Then we will turn to some of the limitations and implications of these approaches for

the film industry. In the conclusion, we argue that big data methods are bound to be used ever more intensively but that the consequences may not be those that are widely hyped.

“Big Data,” “Hollywood,” and the Importance of the Opening Weekend

Within the scope of this chapter, it is not possible to go into the by now extensive discussion of the nature of “big data.” Briefly, we use the term here to indicate data that is “unprecedented in scale and scope in relation to a given phenomenon” (Meyer and Schroeder 2015), though there are a number of other possible definitions and there has been much discussion of the term. Nothing hinges on the definition for the sake of this chapter except that the data that was previously available to the movie industry included box-office receipts, circulation of outlets in which advertising has been placed, and surveys and focus groups about awareness of and attitudes toward particular movies. The data that is now available is different in scale and scope (and timeliness) and includes, for instance, YouTube views of movie trailers, comments made on movie-related websites such as Rotten Tomatoes, and mentions of movies in social media posts as well as the ability to analyze the sentiments expressed within those mentions.

No less contested than the term “big data” is the question of what is meant by “Hollywood.” For the sake of this chapter, “Hollywood” serves as a metonym for the American motion picture industry. Even though it can be assumed that analytics will be used elsewhere, it can also be assumed that the Hollywood film industry will continue to be at the forefront of using big data analytics, if only because it has been at the forefront of gauging audiences in the past and because much of the relevant work so far is about Hollywood blockbusters. “Hollywood” and “film industry” (or “movie industry”) will thus be used interchangeably in this chapter. A further reason that analytics is likely to be used in Hollywood above all is that the question of how to figure out which movies will be successful has become the stuff of legend. The screenwriter William Goldman famously said: “Nobody knows anything” (Goldman 1996). Or, in reference to how movies should be marketed, consider the following purportedly popular joke among Hollywood executives: “How do you market a movie in Hollywood? Simple: All the studio executives get on a rooftop and scream, ‘Come see my movie!’” (The Atlantic 2015).

Yet despite the idea that apparently nobody knows anything, vast sums are devoted to promoting Hollywood movies. Some have estimated that average marketing costs in the United States are \$30 million per film (Hennig-Thurau et al. 2004; Scott 2004: 47), a figure which can easily rise to \$200 million in exceptional cases (McClintock 2004). These figures have become more difficult to verify since the only reliable source, the Motion Picture Association of America (MPAA), has stopped publishing numbers on average marketing costs in 2007 and studios normally do not disclose them. However, MPAA reports from 1980 to 2007 show a steady increase in marketing costs. If this trend has continued past 2007, today’s

average marketing costs can be assumed to be in the region of \$35 to \$45 million per film, if not higher (Follows 2017). Thus there is an intense pressure to reap the rewards of these efforts and to gauge how effective they are.

Before delving into this topic, it is important to note that despite changes in recent decades with cable TV, VCRs, pay-per-view, and more, the Hollywood movie industry has remained remarkably stable over time (Waterman 2004). There is nevertheless great uncertainty about what makes for successful films, and so it is highly useful to know something in advance about which films will make a profit, which is essential in an industry that is, contrary to the belief of many, solely “economically oriented” (Wyatt 1995: 15) and where every production constitutes a risky investment (Jenkins et al. 2013: 199). Only 22% of all films in Hollywood usually make profit or break even, and 78% lose money (De Vany 2004: 214).

Particularly important in this regard is the first weekend when movies open (or are released) in cinemas. These “opening weekends” (Waterman 2004: 26) are widely regarded to be the key to financial success because how well movies do on these weekends will determine their popularity or otherwise. To understand why, it is necessary to provide some context: marketing a movie sometimes takes place up to a year in advance. Marketing campaigns entail that, by the time a movie opens, there are keen audiences. The number of people that go to see a movie on the first weekend will determine on how many screens (or in how many theaters) the movie will then be shown in during the first weeks, then worldwide (De Vany 2004), and subsequently in other formats such as pay-per-view and television (Smith and Telang 2016: 40–44). Opening weekends and the number of screens will thus divide movies into winners or losers: success on the opening weekend means that a movie will be shown widely, and so it will have a chance to earn the large profits that only a few films (blockbusters) make every year, while the large number of other movies will only be shown in a few cinemas, setting them on a path toward likely making a loss.

Consequently, getting enough people to see a film in the time frame of the initial release and ensuring that the response is positive are the key to word-of-mouth effects which then set the film on course for popular success and thus economic viability (McKenzie 2009; De Vany and Walls 1996). If the millions that are spent on promoting the right film can be targeted at the right audience and are not wasted on others who are unlikely to see a certain film, then that will be an effective use of resources or the opposite (De Vany 2004; Hayes and Bing 2004). How the opening weekend has become an ever greater focus of promotional efforts, including efforts to shape and measure audiences, and how these efforts have changed over time have been described in depth (up to 2003) by Hayes and Bing (2004). Hayes and Bing also highlight another reason why the opening weekend is important – because it sets the scene for a split of profits between movie studios and distributors as against theaters: in the first weeks, the split of revenues favors studios and distributors, whereas over time it favors the theaters, hence the incentive for studios to “open wide” (on as many screens as possible).

The opening weekend is therefore an inflection point in a market where there can be only a few successes and many failures. The months leading up to a movie’s

release are an important precondition, but the opening weekend is crucial. Despite the many changes in film that have taken place recently – genres moving in and out of fashion (e.g., recently superhero films have been popular), new modes of distribution (films showing on pay-per-view channels such as Netflix weeks after opening), and changing viewing habits (younger audiences turning to YouTube or downloading movies) – the system whereby a few major studios release a limited number of movies per year that compete on opening weekends has remained stable for almost a century. The “blockbuster strategy,” on the other hand, whereby lots of money is devoted to very few movies – so-called tentpole movies – in the hope of big returns, only started in the 1970s (Baumann 2007), when the competitiveness among studios increased.

In view of changing audience habits, such as younger people watching YouTube and pay-per-view channels, some think that the “blockbuster” strategy no longer works. But Elberse (2013) has argued against this view: she counters that betting on a few big hits is still the most successful strategy. She shows, not only for movies but also other cultural products such as music and books, that devoting a disproportionate amount of resources to ensure that a few big hits become blockbusters amidst many lower-earning offerings is still the best way to ensure a successful strategy in today’s markets. Her reasoning is that where there are many diverse offerings, including low-budget independent productions and low-cost dissemination channels such as YouTube, the additional effort at ensuring that a few blockbusters still stand out has proven itself. Her evidence in the movie industry includes the 12-year reign (from 1999) of Alan Horn as the head of Warner Brothers during which the studio had a series of spectacularly profitable hits (Horn has since become the head of Walt Disney Studios, which has adopted a similar strategy) – in contrast with other studios that during the same period spread their resources more evenly to “hedge their bets.”

The implication for big data movie prediction, as we shall see, is that the effort devoted to accurate prediction has become ever more intensive and concentrated on the opening weekend. Marketing mainly takes place before the opening weekend, and so efforts to harness social media to generate a “buzz” around movies are crucial to maximizing marketing impact.

Predicting Future Box Office with Big Data

To assess the potential impact of big data in Hollywood and especially the prediction of box-office success, it will be useful to review a number of seminal studies. Within a short space, it will not be possible to do this comprehensively. The aim is rather to highlight studies which illustrate the range of approaches and how they build on each other. Research prior to using digital media on the effects, for example, of “star power,” is so extensive that there are now meta-reviews (Carrillat et al. 2018) which are able to evaluate the effect sizes of many (150) studies. While these are not directly relevant to big data studies, one finding that relates to our discussion is that moviegoers’ reviews have not begun to outweigh critics’ reviews in determining blockbuster success, as some have argued.

When we move to Internet-based studies, in recent years, researchers have used many types of data and approaches to make predictions relating to the film industry, with various degrees of success. To give just one example, the Farsite data science firm (Gold et al. 2013) predicted five out of six top Oscar awards for the 2012 Oscars – an 83% success rate – by using a combination of data. These data included audience and critic ratings on Rotten Tomatoes and box-office revenue and previous award success such as for the Golden Globes and the Directors Guild Awards. The authors of the study highlight that taking a number of different data types into account improves the model. However, it is also easier to predict the Oscars than to predict box-office success: there are several strongly indicative data sources to rely on and only a few candidates to predict (five nominees for five of the top categories such as best actor and nine for the category of best film). For box-office success, in contrast, the aim is to predict the magnitude of success where there are many variables that can affect performance of several competing films.

Over the years, a range of studies has tried to accurately predict box-office returns using different approaches. One strain of studies, for instance, looks at data from Internet-based virtual stock markets such as the virtual Hollywood Stock Exchange (HSX). Participants trade shares of virtual stocks, in the case of HSX movie stocks, which represent a bet on the outcome of a future market situation (Spann and Skiera 2003). A higher price of a stock is deemed to indicate a movies' better potential performance. Collectively, HSX users have been shown to produce good forecasts of actual box-office returns, with a high degree of correlation between HSX prices and box-office revenues (Elberse and Eliashberg 2003; Spann and Skiera 2003; Pennock et al. 2001; Foutz and Jank 2007; McKenzie 2013). Doshi et al. developed a different approach (Doshi et al. 2010), using a combination of data in their attempt to predict the success of movies over their first 4 weeks in the box office after opening. They used movie rating metrics from IMDb and Rotten Tomatoes, a measure of the general buzz a movie creates in the blogosphere and sentiment metrics for each film gathered from posts in the IMDb forum. In this way, Doshi et al. tried to predict stock values on the virtual trading platform, HSX. While Doshi et al.'s study remained preliminary, they were able to achieve some robust results and demonstrated a general feasibility of mixed-data approaches. Yet another approach can be found in the study of Goel et al. who used web searches on the Yahoo! search engine to predict opening weekend box-office revenue for 119 films for a year in 2008–2009 (Goel et al. 2010). They found that search-based predictions performed well, also compared to predicting video games and music hits, and suggest that this is partly to do with the fact that moviegoers may be particularly interested in finding theaters where movies are playing or purchasing tickets, while searches are less common for video games and music hits. Despite good forecasts, they point out that the main advantage of using search behavior may not be accurate but rather the ready availability of these data. Another early study is Mishne and Glance, who confirmed a correlation between the volume of references to a movie in blog posts and a movie's financial success on the opening weekend (Mishne and Glance 2006). They suggest furthermore that a shallow sentiment analysis of the posts can improve

the prediction, although they caution that sentiment analysis alone does not suffice to build a predictive model.

In terms of studies using social media, we begin by focusing, for reasons of space, on several influential recent studies: here the study that provided an early benchmark was Asur and Huberman's (2010) prediction of movies' financial success using Twitter data. The authors posit that films that are most talked about in advance on Twitter will perform best at the box office. They put together a dataset of Twitter mentions comprised of 2.89 million tweets from 1.89 million users referring to 24 films released over a period of 3 months. Using a linear regression model, they were able to demonstrate a strong correlation between Twitter mentions of a film and its box-office performance, with an adjusted R^2 of 0.97 on the night before the movie's release for the first weekend revenue. In a second step, they carried out a sentiment analysis of tweets and found that positive Tweets following the release were considered as recommendations by people who had seen the movie. But while the sentiment analysis improved their model's predictive power, the effect was minimal. We can also already note that Asur and Huberman's collection of tweets, like those of the other studies reviewed here, focused on what they call the "critical period," from 1 week before the movie release until 2 weeks after the opening weekend, by which time they say, the information about the movie has largely spread and so the public has made up its mind about whether the movie will be successful or not.

Liu et al. (2016) built on Asur and Huberman's approach. They used advanced text mining and linear and non-linear regression models on a dataset of five million tweets collected from the Chinese microblogging site Sina Weibo and were able to predict the first-week revenue and total gross income of 57 films in 2012. Variables for their prediction models include the volume of tweets referring to a movie, the number of theaters in which a movie was released, ticket purchase intention expressed in tweets, sentiment of a tweet, and the popularity of search engine queries for movie directors and main actors on the search engine Baidu (the dominant search engine in China, which can be gauged by Baidu Trends, similar to Google Trends). Using these variables, Liu and colleagues achieved an adjusted R^2 of 0.95 in estimating a movie's first-week revenue 1 week in advance of a movie's release. They further identified a strong correlation between the purchase intention for movies expressed in tweets and a film's box-office performance. It can be mentioned here that the ability to single out purchasing intention rather than simply measuring the volume of mentions of movies can provide more useful insights from the point of view of marketing and promoting movies.

Mestyán et al. (2013) took a different approach in using Wikipedia data. They tested if a film's box-office success could be predicted by analyzing the activity level of editors and views of the corresponding entry on Wikipedia. To do this, they set up a prediction system based on four Wikipedia activity measures to forecast the first weekend box-office revenue of a set of 312 films released in the United States in 2010. Measures included the number of views of the article page, the number of human (as opposed to "robot" or "bot") editors who had contributed to the article, the number of edits made by human editors, and how often a certain user edited the

article. Using a multilinear regression model, Mestyán et al. demonstrated a strong correlation between Wikipedia activity on a films' entry and its performance at the box office, achieving an R^2 of 0.92 a month in advance of the release for the first weekend revenue and an R^2 of 0.94 the night before the release. The former represents a considerable improvement over Asur and Huberman's model, who were only able to make a high prediction for the first weekend on the night before the release. Here we can already note that it is difficult to compare these studies, not just because they use different time frames but also because the different media they use are not as comparable as, say, "star power" or number of favorable critics' reviews (though these may also have comparability issues).

Mestyán et al., as mentioned, use activity level as a measure, which is a combination of four activities, the numbers of views, editors, edits, and editing rigor (correcting edits). This measure, they say, works well because the activity level indicates enthusiasm among a group that is highly interested in movies. Moreover, the entries are typically started a month or more in advance of the movie's release, and so they give a more consistent indication of enthusiasm than tweets, which typically only start (and peak) around the time of the movie's release. And their prediction is more accurate, as will be discussed later, in the cases of more popular movies where there is a greater volume of data. At the same time, prediction for Mestyán et al. is not based on "valence" (how much people like or dislike a movie). Instead, their measure of Wikipedia activity is simply a measure of level of engagement or interest.

These studies are part of a longer-standing line of research that focuses on word-of-mouth effects. De Vany and Walls, McKenzie, and others have demonstrated that there is a strong correlation between word-of-mouth, also online, and expert reviews and a film's box-office performance (De Vany and Walls 1996; McKenzie 2013). From an economics perspective, this relationship is due to movies being "experience goods" (Nelson 1970), whereby the opinion of others is an important factor in making a consumption decision. Both word-of-mouth and expert reviews have therefore been used to predict a movie's box-office performance. For example, Joshi et al. (2010) used sentiment analysis on several years of film reviews from seven major American news outlets to inform their prediction model. They achieved a correlation coefficient of 0.796 for the first weekend revenue, which could be further improved to 0.819 by including a film's metadata (e.g., number of screens, budget) in the regression model. Similarly, Kim et al. (2013) used word-of-mouth and expert reviews instead of sentiment analysis. Kim et al. measured the frequency of expert reviews, the valence rating of expert reviews, plus the frequency of online word-of-mouth as predictors for a film's box-office performance. They used data from IMDb and Rotten Tomatoes to confirm the frequency of online word-of-mouth and the valence rating of expert reviews as important predictors of box-office success. Roschk and Große (2013) confirmed this result using a similar approach. They found that a high volume of online word-of-mouth ("buzz") on IMDb shortly before a film's release and during the first week has a strong impact on short-term box-office success and could thus be used as a predictor for box-office performance.

This leads us to the final study here: From an economics perspective, the reason for Hollywood's predicament is that films are also an "experience good" in a different way; the audience lacks adequate information about the quality of the product as this can only be obtained after the said product has been consumed with the money irrevocably spent (Nelson 1970; Caves 2000). But the argument has been made that word-of-mouth – or, in the digital realm, "word-of-mouse" – can overcome this information "asymmetry," whereby little or no information is available before the movie's release, and so word-of-mouth can help consumers make a more informed choice about whether to see a movie. One finding here has been that negative word-of-mouth is more powerful than positive word-of-mouth: even though positive word-of-mouth is much more common, the negative evaluations are more helpful in making choices, as they are seen as more reliant and authentic.

Hennig-Thurau et al. (2015) showed that this finding also applies to Twitter. They analyzed a comprehensive corpus of tweets about 105 movies over the course of their opening weekends in the United States. They were able to show that negative tweets were useful in predicting movie success (or lack of success), whereas positive tweets or the ratio of positive to negative tweets had no predictive value. What is interesting about this study is that big data was combined with "small data" – survey answers from a representative sample of Twitter users – to tease out exactly how Twitter made a difference in terms of word-of-mouth about whether to attend a movie. The responses indicate that Twitter is especially important when no other sources of information (such as reviews) are available or that Twitter provides very brief and conveniently accessed reviews (e.g., via smartphone in the queue to buy tickets) or that the information does not need to be sought out but rather comes to the Twitter user unsolicited from acquaintances whose judgments are trusted.

What we see illustrated here is a key point about using digital media for prediction or marketing generally, which is that it is important to have a grasp of why different digital media are used in different ways in relation to discussing cultural products – here, movies. Wikipedia editors are fans or enthusiasts and often highly interested in popular culture, though little is known about them (but see West et al. 2012). Twitter users who comment on films, in contrast, are a wider public. It is interesting to see that both can be used to predict box-office success. At the same time, it should be noted that Hennig-Thurau et al. are not so much interested in prediction as such (which movies will be most popular on the opening weekend) but rather how word-of-mouth (or word-of-mouse) affects box-office receipts on the opening weekend.

Advantages and Limitations

In the past, Hollywood had to rely on focus groups, test screenings, or surveys to gauge audience's interests. The emerging picture was resource intensive, not real time and constrained by small sample sizes. Rust and Huang (2014) say that big data provides "more accurate and detailed customer information at the individual level" and enables "very narrow and specific segmentation of customers." Similarly, automatically mining social media data allows businesses to gauge customers'

opinions toward products, including films. Various sources of data can be combined, including not just social media data but also geo-location (where which movies are popular), credit card data, and the like. All these allow a fine-grained segmentation of customers or cinemagoers and can ideally customize marketing strategies for individual movies. Again, in economics terms, this mitigates “allocative inefficiency” by allowing only the most suitable films to be marketed to appropriate individuals (Fan et al. 2015).

Yet, as with advertising and marketing generally, it is difficult to directly assess the effectiveness of data-driven approaches. This difficulty has not prevented the use and spread of data analytics. One studio, for example, Legendary Entertainment, has tried to identify potential moviegoers on social media and uses them as “guinea pigs” to test different trailers, posters, and messages (Kirsner 2016). And while some studios like Disney and Legendary Entertainment run their own in-house data teams to inform their marketing strategies, there is also a specialist industry that provides analytics services to the movie industry. Perhaps the most prominent is Rentrak, which is now part of Comscore, but IBM’s advanced analytics department (The Atlantic 2015) and Teradata and others provide comparable services to Hollywood studios.

While fine-tuning marketing strategies ex post is one leg in big data audience analytics, the same approaches can be employed to shape the creation of products. To date, little is known about how movies may be shaped – apart from journalistic accounts and scarce industry reports. But companies like Netflix are able to analyze viewers watching and rating content and use these metrics in developing new content (Carr 2013; Smith and Telang 2016: 40–44; Madrigal 2014). One such instance was the series House of Cards which Netflix commissioned after finding out that people had liked the British original (Carr 2013). Similarly, Legendary Entertainment leveraged data from social media platforms to estimate audience demand for films like “Straight Outta Compton” (Kirsner 2016). At the same time, shaping content based on audience needs to be treated with caution. One example that has become emblematic here is the movie “Snakes on a Plane.” After this movie gained substantial attention and a strong online fanbase before its release, the studio New Line Cinema ordered 5 days of reshoots. Usually a sign of problems, the reshoots served to incorporate feedback from users to add new scenes and thus bring the film in line with expectations of the online community. Yet, the movie fell short of expectations and took in only 15.2 million dollars at the box office in its opening days, half of what predictions had suggested in advance (Waxmann 2006).

At the same time, the efforts at prediction and marketing have a number of weaknesses. Asur and Huberman’s study, for example, failed to consider the number of theaters which screened a film. Similarly, Asur and Huberman’s and Liu et al.’s sentiment analyses only considered positive recommendations as indicative of a better box-office performance. But as we have seen, negative word-of-mouth can provide more accurate predictions, and it has also been shown that negative chatter can sometimes improve demand for movies (Berger et al. 2010). Second, there is the question of how far in advance the studies discussed here can provide reliable predictions. As we have seen, the time periods and accuracy vary.

A second issue concerns data availability. Mestyán et al. used Wikipedia data, which has the advantage over Twitter data that it is freely available to researchers and can be built upon since there are no “black boxes” in terms of how the data are generated. But although Mestyán et al.’s approach yielded powerful results, the authors could only obtain data for 312 out of 535 films for their sample period because no Wikipedia entry existed for the others. While this did not affect the model’s reliability, leaving out the performance of approximately 40 percent is a weakness, particularly in relation to less well-known films. It is not clear if these films were not popular enough, or if the lack of an entry is due to Wikipedia’s editorial policies, whereby articles are deleted if the topic is considered not important enough by the community or if articles are incomplete. What we can see here is that different social media have different strengths and weaknesses on the basis of the givenness of how they provide data – rather than the limitations of how data are gathered, as with traditional data-gathering methods.

And while Wikipedia is a good measure of how highly anticipated a movie is, it is of limited help with marketing since Wikipedia gauges interest, neutrally, in the sense of documentation – rather than being part of spreading the conversation and (hopefully) generating positive publicity around a movie. At the same time, it should be stressed again that Wikipedia data is open, both in the sense of being free to use and available for replication based on how the data were arrived at. Twitter data, on other hand, is only available either on a restricted basis or for a fee and only for restricted samples, and since it is not known how the data were generated, it may be difficult to replicate or build on.

A third issue is that in some studies the prediction worked best for more successful films and less well with less successful films due to the smaller volume of related data. As a consequence, big data analytics are likely to be less accurate for more volatile film markets, “niche” films, or generally films where less information is available due to their lower popularity. The implication is that models fail where they are most needed since likely blockbusters arguably have major resources behind them in any event.

Fourth, there are inherent biases in the data. Users of different social media platforms are not representative of the population at large (Wong et al. 2012; Blank 2016), which raises the question for which films the models will hold and where they will yield unreliable results. For instance, as we have seen, Asur and Huberman’s sentiment analysis of tweets was limited by the fact that Twitter users are typically more positive in their reviews which could lead to biased results. Digital divides could skew results against films which mostly appeal to audiences not heavily active on social media platforms or the Internet in general or have fewer skills for creating content (Hargittai 2002, 2007). Or again, Twitter users are different from Wikipedia editors or those who use ratings sites like Rotten Tomatoes.

There is also, fifth, the issue of the metrics themselves. It is often taken at face value that, for instance, a “like” on Facebook and a “retweet” on Twitter are essentially an endorsement, resulting in a comparable set of metrics (see also Simon 2018). However, as Carolin Gerlitz points out, data points are shaped by the respective platforms and charged with different meanings for users (Schäfer et al.

2017: 241). And this applies not only to endorsements on IMDB or Rotten Tomatoes, for example, but also to the types of ratings or the kind of sentiments that are expressed in different fora.

Finally, sixth, there is the challenge of making data usable. Data often comes in different, often unstructured, formats. Not all potential sources are easily accessible (e.g., Facebook data), and integrating data from multiple sources can be a challenge (Fan et al. 2015). As the Internet and social media start to penetrate all layers of society, with more and new devices resulting in an ever-increasing amount of potentially usable data, firms will have to find a way to deal with the growth and varieties of new data.

Benefits and Tensions of Big Data for Hollywood

It is clear that it has become feasible to use big data social media and ratings websites to accurately predict films' box-office success. Likewise, it is clear that these methods are increasingly used, even if "insider" knowledge about exactly how they are used largely comes from journalistic accounts or accounts that, due to their commercially sensitive nature, do not reveal the current state of the art. One question is whether the effectiveness of these methods warrants the shaping of strategies in developing and promoting films.

Here we can step back to consider a more general point: At the apex of the cultural industry – in terms of how the Hollywood movie industry is situated – there is a disconnect between the sacredness of "artistic values" and "rationalization": artistic values are about individual creativity – or "talent" – in the label preferred by the industry. Rationalization, on the other hand, is the process where feedback is used to harness consumers (audiences) to products (films) in an ever more systematic and calculated fashion (Napoli 2010). What those involved in developing movies (studio heads) as well as the main players in making movies (directors, stars, talent agencies) claim is that the rationalization effort (marketing, now also using big data from social media) is absolutely not used to shape the creative process – to admit otherwise would be to admit that individual creativity was not paramount. At the same time, rationalization has of course affected the kinds of movies that are made and how they are made. And films with large budgets are affected more than lesser movies simply because the stakes are so high.

To be sure, it would be useful to know where – in a field in which the amount of attention is constrained even if it is not zero sum – to concentrate the efforts in promoting films. Likewise, it would be useful to know which films should be pulled from theaters early on because they fail to gain traction and which films would benefit from an extended screening period. One example for the application of this method already exists: In the case of the 2015 hacker drama "Black Hat," Legendary Entertainment used insights gained from big data analytics which suggested that the film would not perform well and decided to decrease marketing efforts (Kirsner 2016).

One problem in this regard, however, is the time window of the prediction. Generally, the earlier studios know which movies are going to be "sure hits," the

earlier marketing strategies can be adapted. Unfortunately, not all the studies that have been discussed specify how much in advance their models provide reliable predictions. Liu and colleagues model yielded the best result 1 week in advance of the release, while Asur and Huberman could only make a sufficiently dependable prediction on the night before the release. Only Mestyán et al.'s model could predict box-office success 1 month in advance. IBM's advanced analytics team is purportedly able to make predictions 3 months in advance (The Atlantic 2015), although the validity of this claim cannot be verified without a disclosure of their methods.

Here we can return to the analysis of Hennig-Thurau et al. (2015). They conclude, on a speculative note, that Twitter word-of-mouth could lead to a shake-up of Hollywood's "blockbuster" business model (which was already mentioned briefly). In this model, the studios use the advantage of information asymmetry in order to push consumers to watch "blockbuster" movies with massive marketing efforts – before consumers can have recourse to timely and effective critical scrutiny to make their choices. But with Twitter, it becomes possible that movies could be judged more effectively and quickly, and if consumers have more information about their quality further in advance, ultimately it would perhaps become more commonplace that Twitter word-of-mouth would guide consumers to high-quality movies – rather than bets being made on a few big hits where information about quality is lacking. Yet this is a rather optimistic view, since it is more likely, based on how technologies complement rather than displace each other, that Twitter and other digital media will be used in addition to other forms of marketing and in this case used to target audiences more effectively – aiming at particular niches, for example, and picking up signals about the appeal of particular products earlier. In other words, rather than replacing the blockbuster model with better quality movies, it is more likely that Twitter and other social media could be used to steer all moviemaking, including potential blockbusters, more effectively toward their intended target audiences.

De Vany (2004) has a different though complementary perspective to Hennig-Thurau et al. He says that those making movies should orient themselves more by an "outside" view, by which he means an objective economist's view, such as his findings about whether marketing, star power, genre, number of screens, and the like are predictive of a movie's overall economic success or profitability – factors which, he argues, in fact have a small or negligible effect. He contrasts this with the "inside view" which is the view of studio heads and marketers and others who have hunches about how these factors affect success. He argues that they put too much emphasis on these factors and should instead orient themselves by impersonal (though that is our word, not his) calculation. While Hennig-Thurau et al. want to improve quality from the consumer perspective, De Vany wants to improve success from the producer perspective. But while these attempts are laudable, they overlook that the machinery of marketing or "packaging" movies so that they have blockbuster potential has an inbuilt momentum which would be difficult to dislodge.

Perhaps the main benefit of data-driven approaches is to identify which segments or even which individuals from among the public are potentially interested in a product and so to refine marketing campaigns (Fan et al. 2015). This suggests two

types of application. One is to use real-time audience analytics pre-release, in the late stages of a film's production, when marketing campaigns have already started but without the "product" being finished. In the time left until the film's release, audience analytics can be used to assess the reception of the rolling marketing campaign (e.g., the performance of trailers shared online), giving studios the ability to optimize their strategies "on the go" to achieve maximum effect. These insights also allow the studios to target specific demographics or geographic areas or adapt marketing campaigns to appeal to those most interested in a given film. The same technique could also be used in relation to the final stages of the production process, where it is a standard practice in Hollywood that most films are shown to a test audience before release. The results of subsequent surveys are used to make changes ranging from minor amendments to extensive reshoots or re edits of parts of the film. Audience metrics could aid (or replace) this process by identifying public sentiments which could potentially inform the final outcome of the production process, eventually giving the audience more of "what it wants" in the final cut of the film.

A second field of application is post-release. As we have seen, the first week (s) after a film's release is crucial for its long-term box-office success. Hence getting the marketing "right" in this period is key as it is the last point of intervention before the film enters its second release window. In this case, it could be possible to alter not the film but the marketing after its release. One advantage here is the nature of the available data on social media; by identifying individuals who have already seen the film, as happened with the film "Black Hat," analytics could help to single out individuals with similar characteristics and interests while the movie is still showing in cinemas. As the final product can no longer be altered, tailoring a films' marketing strategy ex post based on real-time opinion assessments to target specific demographics could increase marketing efficiency and save money.

Data generated by audiences can thus play an important role in Hollywood. This raises an important issue which we have only mentioned briefly, which is: how might data-driven approaches change the film industry? It seems that regardless of what we have described so far, studios and data analytics firms increasingly use a mixture of approaches and integrate audience-centered big data analytics in all steps along the way from conception to promotion. This also applies to streaming services like Netflix and Amazon Prime that are beginning to compete with studios in producing movies. At the other end of scale, there are an increasing number of independent and other niche films that compete for attention by being released on YouTube and other channels. Most likely, various data-driven approaches will be combined and used in an ever more all-encompassing way for all types of movies and marketing efforts during all periods – given that (De Vany's) "insider view" dominates and will push toward maximizing the use of available tools.

Conclusion and Future Research

This chapter has offered a number of perspectives on how big data is and could be used in the film industry. The feasibility of big data approaches has led to a steady increase in the use of big data methods to inform decision-making processes. This

can be seen as part of a process of “rationalization,” which, as already mentioned, Napoli (2010) has documented for audiences generally. Napoli argues that new technologies have allowed for more powerful measurement of audiences for digital media (e.g., online TV or newspapers), which entails that these audiences can be measured more systematically, which in turn enables greater control in terms of which audiences are targeted and how products can be tailored to them. At the same time, these new approaches are unlikely to replace existing practices of developing and making movies – if only because they are not compatible with the self-image of the industry, which thinks of itself as “artistic.” Napoli argues that “rationalization” is bound to encounter resistance, as when regulators prevent audience measurement due to concerns about data privacy, for example. But it is possible to go further than Napoli, at least for movie audience measurement and prediction. Even though “rationalization” may be in tension with the “artistic” values of moviemakers, it will nevertheless be adopted inasmuch as it is perceived to be critical to commercial success. Thus there will be winners and losers in this process, and apart from the potential losers among those championing “artistic” values, the winners will be the organizations that control the data analysis as well as the organizations that are in the strongest position to use data analysis for predictive purposes. And further losers, as already discussed, could be the smaller “niche” movies where too little data for fine-grained analysis is available.

At the same time, apart from commercial success, there are other uses of prediction with big data. While predicting box-office success will undoubtedly remain an area where big data efforts are focused for practical reasons, from a social science perspective, there could be more interesting questions that could be illuminated with big data from social media: for example, what kinds of movies become most popular, judged not by opening weekend box-office receipts but over a longer term? And how does this relate to the amount and kind of social media activity during the course of the movie’s showing? Put differently, how is the popular – as opposed to professional media or critics’ – discussion of movies reflected in cultural products (movies) and vice versa? That is a question for which previously data was not readily available, though there have, of course, been surveys of moviegoers and the like. In other words, it is worth thinking about how the instrumental uses of big data relate to other potential uses of big data that illuminate longer-standing or new social science questions that new sources of data make it possible to answer.

One area that has not been covered here is the role of movie critics or movie reviews (Blank 2007). But it has been shown that reviews are not necessarily an important or decisive factor in movie success (De Vany 2004; Carrillat et al. 2018), and in France, for example, it has been shown that directors are more influential in determining box-office success than in other countries, where stars or genres are greater determinants (Hadida 2009). Which of these factors is most important could also be studied by using social media and other data? And a further issue for future research could be whether the techniques being used, as with other uses of social media data, covertly manipulate users, and thus, even if these uses remain within the bounds of legality, there are ethical issues which may sit uneasily with the public (Schroeder 2018: 126–148). In terms of future research along these lines, we can

point out that this article has only concentrated on big data approaches focused on social media analysis and the prediction of box-office successes.

Another area that deserves mention in conclusion is that big data approaches have recently also been used to address and understand online piracy, which is a well-known problem in the film industry, with some studies showing that online piracy reduces box-office revenue by up to 19% (Ma et al. 2016). A different big data approach was to analyze online sales and BitTorrent tracking data: in this way Danaher et al. (2010) were able to assess the effect of the availability of content on digital distribution channels on online piracy. Industry reports have also demonstrated how the large-scale analysis of online piracy can be harnessed for business. Analyzing and tracking the piracy of films can, for example, help to understand pre-existing demand or regional pre-release demand. If a movie has pre-existing piracy demand, further analysis can help to estimate the size, demographics, location, and interest of this audience, which can then inform marketing and sales decisions. Comparable approaches have already been used by Netflix (Spangler 2013), Hulu, and HBO (McAlone 2016) which have, in the past, based the decision to acquire streaming rights for TV shows on their popularity with online pirates.

But again, this area is so recent that there are still debates: a study by Ma et al. (2016) confirmed that movie piracy does affect box-office revenue negatively, going against other studies that had suggested that there is little or no effect of piracy. There are obvious implications for the regulation of piracy, but what is interesting in this recent study for our topic here is that they were also able to evaluate the positive effect of piracy for some movies – positive, because the good publicity that a movie can receive via word-of-mouth from those who have seen pirated versions of the movie can lead to greater box-office takings. While the authors point out that this effect does not outweigh the overall negative effects of piracy, what can be seen here is that advance word-of-mouth about a movie, which is crucial for prediction, is also important: perhaps even the word-of-mouth arising from online piracy can, in the future, be used as part of predictions of movie success (and other questions such as movie tastes among certain audiences).

Future avenues for big data research on the film industry will also potentially harness data obtained from “smart devices.” Home assistants such as Amazon’s “Alexa,” so-called smart watches or similar data-gathering devices are becoming increasingly popular. As the “Internet of Things” becomes reality, these and other data sources will likely yield interesting new insights for researchers and industry practitioners. Again, this raises questions about winners and losers, with those who have access to and control these data (including some researchers) among the winners, as well as those audiences that are “data rich” (i.e., use these devices), while other “data poor” organizations and audiences are less well served. And again, analytics based on these data sources are likely to produce ever more fine-grained prediction, but also concentrate these efforts on certain types of products (block-busters) rather than others. For academic researchers in particular, collaboration with the industry opens up new opportunities but at the cost of a new divide between those with access to proprietary or commercial data sources and researchers without such access.

Finally, there are also many potential overlaps with other areas of using big data for analyzing cultural products or what Lazar calls “arts analytics” (Lazar 2013). So far, little is known about the potential implications of analyzing the “texts” a film comprises (Bellour 1999) – scripts, scores, images – using big data approaches. Currently, big data can tell the film industry mostly about what the lowest common denominator audiences want, not what niche audiences might want, but this is a restriction of the data sources that have so far been used and could be extended to more specialized audiences. Finally, it would be worth investigating if data-driven approaches are bound to elude the restless search for novelty among filmmakers and audiences. After all, as Kermode points out, “Casablanca” would never have become an all-time classic had audiences been given a reunion of Rick and Elsa (Kermode 2014). What the audience seems to want is perhaps not always what it needs.

References

- Asur S, Huberman BA (2010) Predicting the future with social media. In: Proceedings of the 2010 IEEE/WIC/ACM international conference on web intelligence and intelligent agent technology, vol 01. IEEE Computer Society, Washington, DC, pp 492–499
- Baumann S (2007) Hollywood highbrow: from entertainment to art. Princeton University Press, Princeton
- Bellour R (1999) Der unauffindbare Text montage/av. 1:8–17
- Berger J, Sorensen AT, Rasmussen SJ (2010) Positive effects of negative publicity: when negative reviews increase sales. *Mark Sci* 29:815–827. <https://doi.org/10.1287/mksc.1090.0557>
- Blank G (2007) Critics, ratings, and society: the sociology of reviews. Rowman & Littlefield, Plymouth
- Blank G (2016) The digital divide among twitter users and its implications for social research. *Soc Sci Comput Rev* 35:679–697. <https://doi.org/10.1177/0894439316671698>
- Carr D (2013) For ‘House of Cards,’ using big data to guarantee its popularity. In: The New York Times. <http://www.nytimes.com/2013/02/25/business/media/for-house-of-cards-using-big-data-to-guarantee-its-popularity.html>. Accessed 16 Feb 2019
- Carrillat FA, Legoux R, Hadida AL (2018) Debates and assumptions about motion picture performance: a meta-analysis. *J Acad Mark Sci* 46:273–299. <https://doi.org/10.1007/s11747-017-0561-6>
- Caves RE (2000) Creative industries: contracts between art and commerce. Harvard University Press, Cambridge/London
- Danaher B, Dhanasobhon S, Smith MD, Telang R (2010) Converting pirates without cannibalizing purchasers: the impact of digital distribution on physical sales and internet piracy. *Mark Sci* 29:1138–1151. <https://doi.org/10.1287/mksc.1100.0600>
- De Vany A (2004) Hollywood economics: how extreme uncertainty shapes the film industry, 1st edn. Routledge, London/New York
- De Vany A, Walls WD (1996) Bose-Einstein dynamics and adaptive contracting in the motion picture industry. *Econ J* 106:1493–1514. <https://doi.org/10.2307/2235197>
- Doshi L, Krauss J, Nann S, Gloor P (2010) Predicting movie prices through dynamic social network analysis. *Procedia Soc Behav Sci* 2:6423–6433. <https://doi.org/10.1016/j.sbspro.2010.04.052>
- Elberse A (2013) Blockbusters: why big hits – and big risks – are the future of the entertainment business. Henry Holt, New York
- Elberse A, Eliashberg J (2003) Demand and supply dynamics for sequentially released products in international markets: the case of motion pictures. *Mark Sci* 22:329–354. <https://doi.org/10.1287/mksc.22.3.329.17740>

- Fan S, Lau RYK, Zhao JL (2015) Demystifying big data analytics for business intelligence through the Lens of marketing mix. *Big Data Res* 2:28–32. <https://doi.org/10.1016/j.bdr.2015.02.006>
- Follows S (2017) The cost of movie prints and advertising. In: Stephen Follows. <https://stephenfollows.com/prints-and-advertising/>. Accessed 12 June 2018
- Foutz NZ, Jank W (2007) The wisdom of crowds: pre-release forecasting via functional shape analysis of the online virtual stock market. Social Science Research Network, Rochester
- Goel S, Hofman JM, Lahaie S et al (2010) Predicting consumer behaviour with web search. *PNAS* 107:17486–17490. <https://doi.org/10.1073/pnas.1005962107>
- Gold M, McClaren R, Gaughan C (2013) The lessons Oscar taught us: data science and media & entertainment. *Big Data* 1:105–109. <https://doi.org/10.1089/big.2013.0009>
- Goldman W (1996) Adventures in the screen trade: a personal view of Hollywood, 2nd edn. Abacus, London
- Hadida AL (2009) Motion picture performance: a review and research agenda. *Int J Manag Rev* 11:297–335. <https://doi.org/10.1111/j.1468-2370.2008.00240.x>
- Hargittai E (2002) Second-level digital divide: differences in people's online skills. *First Monday* 7. <https://doi.org/10.5210/fm.v7i4.942>
- Hargittai E (2007) Whose space? Differences among users and non-users of social network sites. *J Comput-Mediat Commun* 13:276–297. <https://doi.org/10.1111/j.1083-6101.2007.00396.x>
- Hayes D, Bing J (2004) Open wide: how Hollywood box office became a National Obsession. Miami, New York
- Hennig-Thurau T, Walsh G, Bode M (2004) Exporting media products: understanding the success and failure of Hollywood movies in Germany. ACR North American Advances NA-31
- Hennig-Thurau T, Wiertz C, Feldhaus F (2015) Does twitter matter? The impact of microblogging word of mouth on consumers' adoption of new movies. *J Acad Mark Sci* 43:375–394. <https://doi.org/10.1007/s11747-014-0388-3>
- Jenkins H, Ford S, Green J (2013) Spreadable media: creating value and meaning in a networked culture. New York University Press, New York
- Joshi M, Das D, Gimpel K, Smith NA (2010) Movie reviews and revenues: an experiment in text regression. In: Human language technologies: the 2010 annual conference of the North American chapter of the ACL, Los Angeles, pp 293–296
- Kermode M (2014) Hatchet job: love movies, hate critics. Picador, London
- Kim SH, Park N, Park SH (2013) Exploring the effects of online word of mouth and expert reviews on theatrical movies' box office success. *J Media Econ* 26:98–114. <https://doi.org/10.1080/08997764.2013.785551>
- Kirsner S (2016) Making movies the 'Moneyball' way – the Boston Globe. In: [BostonGlobe.com](https://www.bostonglobe.com/business/technology/2016/03/31/making-movies-moneyball-way/Uzgwh2cdGthA1N3nZHqz0N/story.html). <https://www.bostonglobe.com/business/technology/2016/03/31/making-movies-moneyball-way/Uzgwh2cdGthA1N3nZHqz0N/story.html>. Accessed 17 Apr 2017
- Lazar N (2013) The big picture: the arts – digitized, quantified, and analyzed. *Chance* 26:42–45. <https://doi.org/10.1080/09332480.2013.868756>
- Liu T, Ding X, Chen Y et al (2016) Predicting movie box-office revenues by exploiting large-scale social media content. *Multimed Tools Appl* 75:1509–1528. <https://doi.org/10.1007/s11042-014-2270-1>
- Ma L, Montgomery A, Smith MD (2016) The dual impact of movie piracy on box-office revenue: cannibalization and promotion. Social Science Research Network, Rochester
- Madrigal AC (2014) How Netflix reverse engineered Hollywood. In: The Atlantic. <https://www.theatlantic.com/technology/archive/2014/01/how-netflix-reverse-engineered-hollywood/282679/>. Accessed 10 Oct 2017
- McAlone N (2016) How piracy actually helps Hulu make a lot of great decisions. In: Business insider. <http://uk.businessinsider.com/why-hulu-tracks-piracy-2016-4>. Accessed 4 Oct 2017
- McClintock P (2004) \$200 million and rising: Hollywood struggles with soaring marketing costs. In: The Hollywood reporter. <https://www.hollywoodreporter.com/news/200-million-rising-hollywood-struggles-721818>. Accessed 13 Apr 2017
- McKenzie J (2009) Revealed word-of-mouth demand and adaptive supply: survival of motion pictures at the Australian box office. *J Cult Econ* 33:279–299. <https://doi.org/10.1007/s10824-009-9104-4>

- McKenzie J (2013) Predicting box office with and without markets: do internet users know anything? *Inf Econ Policy* 25:70–80. <https://doi.org/10.1016/j.infoecopol.2013.05.001>
- Mestyán M, Yasseri T, Kertész J (2013) Early prediction of movie box office success based on Wikipedia activity big data. *PLoS One* 8:e71226. <https://doi.org/10.1371/journal.pone.0071226>
- Meyer ET, Schroeder R (2015) Knowledge machines: digital transformations of the sciences and humanities. MIT Press, Cambridge
- Mishne G, Glance N (2006) Predicting movie sales from blogger sentiment. Microsoft Research AAAI Spring Symposium: computational approaches to analyzing weblogs, 155–158. <https://www.aaai.org/Papers/Symposia/Spring/2006/SS-06-03/SS06-03-030.pdf>
- Napoli P (2010) Audience evolution: new technologies and the transformation of media audiences. Columbia University Press, New York
- Nelson P (1970) Information and consumer behavior. *J Polit Econ* 78:311–329. <https://doi.org/10.1086/259630>
- Pennock DM, Lawrence S, Giles CL, Nielsen FA (2001) The power of play: efficiency and forecast accuracy in web market games. NEC Research Institute Technical Report #2000-168, <http://artificialmarkets.com/am/pennock-neci-tr-2000-168/>
- Roschk H, Große S (2013) Talking about films: word-of-mouth behavior and the network of success determinants of motion pictures. *J Promot Manag* 19:299–316. <https://doi.org/10.1080/10496491.2013.770810>
- Rust RT, Huang M-H (2014) The service revolution and the transformation of marketing science. *Mark Sci* 33:206–221. <https://doi.org/10.1287/mksc.2013.0836>
- Schäfer MS, Van Es K (eds) (2017) The datafied society. Studying culture through data. Amsterdam University Press, Amsterdam
- Schroeder R (2018) Social theory after the Internet: media, technology and globalization. UCL Press, London
- Scott A (2004) Hollywood and the world: the geography of motion-picture distribution and marketing. *Rev Int Polit Econ* 11(1):33–61. <https://doi.org/10.1080/0969229042000179758>
- Simon FM (2018) What determines a Journalist's popularity on twitter? *J Stud*:1–21. <https://doi.org/10.1080/1461670X.2018.1500491>
- Smith MD, Telang R (2016) Streaming, sharing, stealing: big data and the future of entertainment, 1st edn. The MIT Press, Cambridge
- Spangler, T (2013) How Netflix uses piracy to pick its programming. In: Variety. <http://variety.com/2013/digital/news/how-netflix-uses-piracy-to-pick-its-programming-1200611539/>. Accessed 4 Oct 2017
- Spann M, Skiera B (2003) Internet-based virtual stock markets for business forecasting. *Manag Sci* 49:1310–1326. <https://doi.org/10.1287/mnsc.49.10.1310.17314>
- Staiger J (1990) Announcing wares, winning patrons, voicing ideals: thinking about the history and theory of film advertising. *Cine J* 29:3–31. <https://doi.org/10.2307/1225178>
- The Atlantic (2015) Big data and Hollywood: a love story. In: theatlantic.com. <http://www.theatlantic.com/sponsored/ibm-transformation-of-business/big-data-and-hollywood-a-love-story/277/>. Accessed 23 Jan 2017
- Waterman D (2004) Hollywood's road to riches. Harvard University Press, Cambridge
- Waxman S (2006) After hype online, 'snakes on a plane' is letdown at box office. In: The New York Times. <https://www.nytimes.com/2006/08/21/movies/21box.html>. Accessed 10 Nov 2017
- West R, Weber I, Castillo C (2012) Drawing a data-driven portrait of Wikipedia editors. In: Proceedings of the eighth annual international symposium on wikis and open collaboration. ACM, New York, pp 3:1–3:10
- Wong FMF, Sen S, Chiang M (2012) Why watching movie tweets won't tell the whole story? In: Proceedings of the 2012 ACM workshop on workshop on online social networks. ACM, New York, pp 61–66
- Wyatt J (1995) High concept: movies and marketing in Hollywood. University of Texas Press, Austin



Research Ethics, Vulnerability, and Trust on the Internet

31

Katrin Tiidenberg

Contents

Introduction	570
Ethical Particularities of Internet Research	571
Who Is Vulnerable, What Is Sensitive?	572
Problems with Existing Research Ethics Guidance	573
Alternatives	574
How Not to Be an Asshole?	576
Relations	576
Conclusion	580
References	581

Abstract

This chapter addresses the impossible situations, decisions, and what-if imaginaries researchers are faced with daily, especially if undertaking qualitative and/or internet research and/or with vulnerable populations and/or on sensitive topics. It aligns with voices arguing that standardized procedural research ethics are inadequate, and builds on existing work in situational, practice based and feminist ethics to suggest a care based ethical practice. The key to this care based practice of research ethics lies in a particular kind of relationality. This relationality, in turn, is fed by trust and germinates empathy. The chapter works through the concepts and the phenomena of significant relations, trust, and empathy by drawing examples from my ethnographic research with a community of people, who post (semi)naked selfies of their bodies online (constituting a qualitative, internet research study of a sensitive topic, and thus arguably with a vulnerable population). I describe some of my choices and actions that seem to have worked

K. Tiidenberg (✉)

Aarhus University, School of Communication and Culture, Aarhus, Denmark

Baltic Film, Media, Arts and Communication School, Tallinn University, Tallinn, Estonia
e-mail: katrin.tiidenberg@gmail.com

well to build trusting, emphatic and ethical research relationships, and finish the chapter by offering some suggestions and questions that might help those trying to practice an ethics of care.

Keywords

Research ethics · Vulnerable populations · Sensitive topics · Digital research ethics · Internet research · Tumblr · Selfies · Ethnography · Online ethnography

Introduction

Late 2017, I was part of a panel discussion on research ethics organized at the Aarhus University's Institute of Advanced Studies. We had been discussing the complexities of practicing ethical research in great and frustrating detail, when, in a momentary lapse of filters, I said: "at some point it really comes down to trying to not be an asshole." A beat of silence later the white-haired philosopher emeritus Hans Fink next to me said: "Yes! I wholeheartedly agree. Do not be an asshole." As the discussion continued, many participants echoed both the sentiment and the wording. Why? I think there was something in it that resonated. It carries a certain emotional, embodied weight and with it a stronger moral impulse than "professional conduct," "research integrity," and "ethical guidelines." Similarly, Annette Markham (2017) has noted that the word "creepy" resonates extremely well with programmers, web architects, and other professionals, who build the apps and platforms that a lot of our sociality take place on today. Not being "creepy" they can appreciate, ethics of infrastructures less so.

As researchers, we have access to many procedural ethics guidelines. Typically, these guidelines focus on doing no harm and are upheld by research institutions' ethics oversight mechanisms like review boards. Avoiding harm is considered to be accomplishable primarily through procedures of informed consent and confidentiality. This focus on, and approach to, avoiding harm can be considered the basics of research ethics grown out of our appalling history with biomedical and behavioral research (i.e., the Tuskegee syphilis experiment and Milgram's experiments). However, there is mounting critique of the insufficiency of this approach, especially by social researchers, who use ethnographic or qualitative methods, who engage in what can broadly be called internet research, who study vulnerable people or sensitive topics, or who work at the intersection of some of the above. These researchers point out that the underlying understanding of, and operationalization of, harm through standardization of consent and confidentiality is incompatible with certain ontological and epistemological perspectives. In practice, the existing system of ethics oversight often turns into a morally vacant exercise of rhetorical adjustments and a box ticking.

If you feel that current guidelines and ethics review board procedures offer you enough guidance to navigate the treacherous terrains of social research in times of trace-, and metadata; neural networks and machine learning; hacks, leaks; and still – perpetually, always – ambiguously behaving humans, this chapter is not for you. It

will be sparse on clear, normative advice on how to, once and for all, have ethics “covered.” But if you have doubts, if you study anything you feel qualifies as vulnerable populations, or sensitive topics in online contexts, you should keep on reading.

This chapter is about the messy, impossible, and difficult situations, decisions, and what-if imaginaries. It’s based on an assumption that most of our standardized and streamlined attempts at managing research ethics and research risks are inadequate, while conceding to the fact that there is only so much a standardized guideline can accomplish, and acknowledging that what we have is most certainly better than nothing. Continual ethics breaches and researchers’ lack of consensus on what constitutes one (i.e., the conflicting reactions to Facebook “emotional contagion” study by Kramer et al. (2014), the “AI gaydar study” by Wang and Kosinski (2018), or the OK Cupid data leak (Resnick 2016)) indicate that we all need to be consistently invited to contemplate the basics.

Ethical Particularities of Internet Research

Researchers studying phenomena particular to the internet or conducting their research via the internet have, for about three decades now, been discussing whether the technology has particular ethical implications for how we conduct research. If the internet is, as has been convincingly claimed, the central cultural forum and the dominant communication infrastructure today (Jensen and Helles 2011) and if it has reduced the (perceived) impact of time and space in our lives (Baym and Markham 2009) and created a cultural imaginary of a shared world (Couldry 2012), then it must have affordances that shape and constrain how we relate to each other, contest and reproduce norms, or decide what is important. This is clearly of methodological and ethical significance. Social media’s affordances of permanence, searchability, duplicability, and scalability (boyd 2010) can alter the meanings attributed to ordinary everyday situations (i.e., sharing images with friends) and turn these situations into moral dilemmas. The widely propagated logic that individuals are responsible for maintaining their own privacy, and that all material found on the internet can be aggregated into “data” either far enough divorced from people, or fine to use as it was “already public” (Zimmer 2010) creates tensions between groups of scholars. As Beaulieu and Estelalla (2012) say, research objects, tools, and relations are transformed in the process of remediation.

Discourses about the internet and ethics are thus “embedded in deep – often invisible – structures of software, politics and habits” (Markham 2015, 247). These structures are currently dominated by (a) a neoliberal stance that individual users are responsible for protecting themselves from harm, (b) an appropriation of social values with a warm, fuzzy connotation (i.e., “sharing”) for automated information distribution (John 2017), and (c) a legally and morally dubious “effective consent” (Flick 2016) model. This creates an opaque and ambivalent normative environment, where, despite increasing regulation, more and more of research ethics lie with the personal choices of individual researchers.

Of course, professional associations have created a number of reports and resources that offer the best possible advice they can in the face of such complexity. I recommend everyone to take a look at the Association of Internet Researchers' Ethical Decision-Making and Internet Research document (Markham and Buchanan 2012) It recommends an approach based on situated decision-making and is cited by most of the other available codes and guides. The SATORI Ethics assessment in Internet Research Ethics report (Shelley-Egan 2015) offers a reasonably up-to-date overview of relevant journals, conferences, and guidelines and addresses the ethical issues of cloud computing. These reports and guidelines are increasingly realizing that the "ethical guides of traditional disciplines are of limited usefulness" (Beaulieu and Estalella 2012, 10). Many have given up on offering universalistic advice, instead posing questions that they invite researchers to contemplate at various junctons of their projects.

Internet researchers are thus faced with the challenge of interrogating their own assumptions and the prevalent discourses about ethics, the internet, and human sociality, while remembering that their previous experience with the internet or its' research does not cleanly translate into understanding other people's internet use.

Who Is Vulnerable, What Is Sensitive?

Vulnerability (of researched individuals and populations) and sensitivity (of studied data or behaviors) are complicated concepts within discussions of research ethics. Typically people and groups, who are considered incapable of protecting their own interests, are categorized as vulnerable. This might be because of their mental, physical, or skill-related capabilities or disabilities, because of their age (very young and very old), because of their minority status (i.e., race, gender, sexuality), etc. Most rules leave the specification of vulnerability open, but scholarly community agrees that the categorization of people into vulnerable and not has multiple juxtaposing effects. For example, Egan et al. (2006) have shown that research participants with brain injuries found principles of vulnerability patronizing and unhelpful. Categorizing minorities into vulnerable populations might reduce the number of studies conducted with them as researchers feel it is more difficult to get all the necessary approvals (Markham and Buchanan 2012).

Speaking specifically to the vulnerability of research participants in the context of Internet research, the UKCCIS report (2012) points out that susceptibility to online risk is many-factored. Participants' (in the case of the UKCCIS report children) vulnerability online may come from the services they use, the content they view, or their own risky behavior, and may, but does not necessarily stem from their vulnerability "offline." This means that in the case of digital research, we have to ask ourselves, whether we are using the internet as a medium to study people, whose non-Internet-specific behaviors or characteristics make them vulnerable (i.e., people with incurable diseases), if we are studying an online group whose digital practices make them vulnerable (i.e., people posting sexually explicit photos of themselves),

or a group, who becomes (more) vulnerable as a result of participating in our study (i.e., gang members or drug dealers). Vulnerability is contextual.

What counts as a sensitive topic or a sensitive behavior also depends on the cultural context. It might be reasonable to consider some practices (i.e., posting images of uncovered hair, having opinions on gay rights) as sensitive in one setting and not in another. Typically research of illegal activities, everything pertaining to sexuality, abuse, death, and illness are considered sensitive. Sensitivity is assessed based on how private, sacred, or stressful an issue is, how much potential there is for stigmatization, and how (politically) controversial the issues are; but the steepness of possible consequences from participating in the study to both the researcher and the researched is also taken into account (Lee 1993).

Vulnerability and sensitivity are linked. Many sensitive practices will make practitioners or researchers of those practices vulnerable either in legal and administrative terms, to moral scorn, or to stigmatization. Similarly, categorizing a group of research participants as vulnerable makes that project sensitive. Vulnerability and sensitivity are methodological issues – they affect every aspect and stage of our research project and should be approached as such.

There is general agreement that the more vulnerable the participants, the greater the obligation of the researcher to do all they can to protect them (Markham and Buchanan 2012), and the more sensitive a topic, the more needs to be done to mitigate the risks. Typically, sensitive research guidelines suggest specific techniques for arranging and conducting interviews, protecting participants' physical safety, and arranging debriefing or referrals (McCosker et al. 2001). In the case of vulnerable participants and sensitive topics, risk is considered to be steeper, which means that guidelines will be stricter. Typically this means a more formal informed consent process (i.e., a signed form instead of an oral agreement). Researchers studying vulnerable populations often favor emancipatory and empowering approaches that build on the tenets of participatory research. This means building a research project that tries to give marginalized populations a way to control the knowledge produced about them, as well as attempting to offer something of use or benefit to the participants or their communities (Swartz 2011).

Finally, taking into account the particularities of the networked and digitally saturated environment we live in, it could be argued that we are all a step, or a mishap away from being vulnerable; from all data being sensitive. Acknowledging this requires a recalibration of how we approach ethics and our role as researchers.

Problems with Existing Research Ethics Guidance

The underlying premise of many research ethics committees and guidelines is the idea that ethical behavior can be standardized and risk can be predicted. These presumptions are flawed (cf. Mauthner 2012; Markham 2015; Markham and Buchanan 2015). It is not possible to create universal, acontextual ethical norms that will ensure the researchers' ethical behavior. There are often no right answers or good choices; an objective position from which to make ethical judgment does not

exist nor can it be explicitly and unambiguously articulated for all to understand (Mattingly 2005). Instead, an approach that reimagines ethical decision-making as a deliberative process that enables enacting beneficence, justice, and respect for persons on a case-by-case basis is increasingly recommended (Markham and Buchanan 2015, 8).

The procedural ethics we've inherited from biomedical research posits that informed consent, confidentiality, and anonymity are the best ways to uphold the principles of respect, dignity, justice, and the basic human right to privacy (Eynon et al. 2008; Pittaway et al. 2010). Informed consent means that researchers commit to giving research participants detailed information about their study and participants know they are always free to stop participating (Marzano 2012). Confidentiality means that the research participants' personal information will be accessed only as authorized by the participant, and anonymity ensures that the participant cannot be identified from the research data (Felzmann 2013). The problem is not with the principles, but rather with the process of shaping these into guidelines. It has narrowed and hardened ideals into something that masquerades as a universally applicable standard. This has obviously generated a fair share of criticism, which can be condensed into (cf. Tiidenberg 2018 for more detail):

- Informed consent rules incorrectly assume that researchers and research participants are competent and able to predict and understand future harm and risk.
- Our computational and technological capabilities have made full anonymity and confidentiality effectively impossible.
- Rigid consent forms are inappropriate for negotiating harm and risk.
- The standard ethics review board procedures are opaque, inconsistent, and ill-equipped to deal with the complexity of ethical dilemmas encountered by qualitative and internet researchers.

Researchers seeking to improve how we practice procedural ethics call for incorporating ethical thinking into all of one's methodological decisions (Markham 2007), and treating informed consent as a process (Gordon 2003; Lawson 2004; Lomborg 2012), or a situated decision (Markham and Buchanan 2015). Discussions about internet research ethics also increasingly recognize that privacy should be defined based on people's expectations and by taking into account people's perceptions of who their audiences are, instead of just relying on their technical settings or some preconceived ideas about the internet (cf. Nissenbaum 2004; McKee and Porter 2009; Nissenbaum 2010; Warrell and Jacobsen 2014).

Alternatives

Probably the most notable response to the shortcomings of conventional, board-regulated procedural ethics are various situational, feminist, and relational approaches.

Situational ethics builds on the work of the Episcopal priest Joseph Fletcher, who wrote in 1966 that we should make choices based on the context and circumstance of a particular situation and not on some universal law (unless that universal law is “love,” which was the only one he acknowledged). Situational ethics is sometimes called ethics of practice, as it focuses on the everyday decision-making in the unpredictable moments in the thick of conducting research.

Feminist ethics is essentially a relational ethics. This means that it focuses on relationships rather than individuals and in particular relationships of caring and being cared for, hence the often used term of “feminist ethics of care.”¹ A relational ethics of care goes beyond avoiding harm and aspires to beneficence achieved through empathy and trust (Noddings 1984, 2003; Preissle 2007; Ellis 2007; Held 2006). It approaches the relationships between researchers and the researched (and their communities) from the position of mutuality, kindness, and respect (Swartz 2011). Care, in this case, is concurrently a value and a practice, both affective and cognitive. Typically, this care is practiced by adopting a particular attitude toward participants (mindful of power relationships, deeply engaged); toward representing them (trying to give voice to participants’ own perspectives and represent them in emancipatory ways); and in an ambition of giving back to, or being useful for, the communities. This is quite the tall order and not without its own problems. Empathy, care, and context-specific case-by-case decision-making do not lend themselves well for streamlining and standardization. And, as Preissle and Han (2012, 598) say “distance and intimacy create their own problems” – prescribing performances of intimacy and empathy raises issues of emotional labor, which has been linked to gendered commodification of and alienation from human emotions (Hochschild 1983; Duncombe and Jessop 2002). So instead of ratifying “care” into an abstract virtue of itself, instead of forcing a square peg into a round hole, we should embrace the limitations of both procedural and situational ethics and use them in tandem. Procedural ethics can offer the base, unto which, at least in the case of sensitive topics and vulnerable populations, a constant commitment to care can be weaved. This is a resource heavy proposal; it presumes particular skills, talents, and/or sensibilities and requires that researchers collectively surrender to the vulnerability this position entails. If we accept that there are no universal solutions in research ethics, we have to accept that outcomes depend on relationships, situations, empathy, trust, emotions, and to an extent, luck. Does this sound doable to you?

I think one’s reaction to this suggestion is in itself a reasonable first filter. If this sounds tedious, or too much, then don’t do it! It is probably a good idea for those unwilling to inhabit this researcher subjectivity to not study vulnerable people and sensitive topics. There are other research questions in need of answering, where lesser affective effort will less likely generate horrible results.

¹For an overview of the historical and philosophical basis of feminist research ethics read Preissle (2007) and Preissle and Han (2012)

How Not to Be an Asshole?

So how does one enact an ethics of not being an asshole? How does one practice ethics of care as described above? And how does one do so without coming across as patronizing, cynical, or manipulative? Synthesizing and condensing the previously mentioned situational, feminist, and Internet-specific research ethics advice, it seems that the crux of it all lies in a particular kind of relationality. This relationality, in turn, stands on trust and germinates empathy. The following will address each of these – relationality, trust, and empathy – in more detail. In doing so, I will rely on my experience with researching a community of people, who post (semi)naked selfies of themselves on technically public blogs on the social media platform Tumblr (Tiidenberg 2014a, b, 2015; Tiidenberg and Gomez Cruz 2015; Allaste and Tiidenberg 2015; Tiidenberg 2017; Tiidenberg and Whelan 2017; Tiidenberg 2018a, cf. ethics case studies in Tiidenberg 2018b).

Relations

How do we “do” relationships in mediated research situations? Or, more precisely – how do we create and maintain a relationship that will result in answering the research question in an ethical manner? While it may feel weird or cynical to frame relationship building as a question of ethics tactics, it is actually quite common to speak about relationship techniques in the context of research methods. Most interviewing textbooks advise on how to build “rapport,” and ethnographers discuss the various techniques for gaining access. Rapport is a way of making your interviewees feel comfortable and safe. Typically tactics like engaging in everyday conversations before starting an interview, active listening, maintaining eye contact, nodding, and avoiding judgment are recommended (Hesse-Bieber and Leavy 2011). Access includes gaining gatekeepers’ and communities’ approval and trust (Gobo 2008) through a variety of techniques including shaping how one looks, talks, and behaves.

All relationships are built on at least some trust. Trust is borne out of intimacy. And intimacy is lubricated by mutual self-revelation (Archer 1976). Many of the websites and services built on the internet have specific social and technical affordances for self-revelation. Posting status updates and images, commenting, blogging, starting or responding to interactions, checking in, checking out, leaving likes, and indicating what music one is listening to, these are all forms of mediated self-revelation. Internet sociality relies on this, but it is also important to remember that this type of posting, participating, and interacting is what many social media platforms’ business models are based on, which in turn means that the interfaces and architectures of our favorite sites are built to entice us to “share” more. This has been linked to why people, in some mediated situations, can become quite close very quickly. Anonymity or pseudonymity too, aid self-revelation online, and are, to an

extent, afforded by many online spaces. Anonymity has been argued to have a part in fostering certain disinhibition in self-expression (Suler 2004). These socio-technical affordances that social media platforms have for self-revelation and relationship building shape both the everyday relationships between people and the relationships between the researcher and the researched.

The people I studied have pseudonymous blogs onto which they post sensitive content (images of their nude bodies). This practice makes them potentially vulnerable to scorn, stigmatization, and reputational or material harm. Because of this, most of my research participants practice what they call “plausible deniability,” which entails not including their face in their sexy images, removing recognizable tattoos, not including personal information, etc. How does one build trusting relationships with a group like this?

During initial observations, I noticed some particularities about this community’s interactional culture. Among those particularities was what can be called pre-interactional gestures. These include following other people’s blogs, engaging with their content by leaving comments or “hearts,” participating in interactive games (e.g., ten questions), and after a while, humorous, banter-based public dialogue with other members of the community. Noticing the importance of these activities ended up serving multiple methodological and ethical purposes. They helped me understand the boundaries of the field site; notified me of people, who practiced what I was interested in and who could thus serve as gatekeepers or key informants; and sensitized me to the tacit interactional norms of the community.

Observing the importance of these pre-interactional activities, I realized that if I wanted to initiate hopefully ethical, long-term, methodologically potent relationships with my potential informants, I would have to echo the interactional logic of the community/platform and fracture my initial contact into micro-communicative steps. These were:

1. Follow their blog.
2. Engage with their content over time, thus hopefully familiarizing them with my pseudonym.
3. Send a casual message from within the platforms messaging system.

This is where I said I was doing research, but, following the implicit norms of privacy in the community, revealed none of my personal information yet.

4. A short interaction via the platform’s messaging system.

We exchange pseudonymous email addresses, where I initiated self-revelation by letting my potential informant know my real name and giving more information on my study.

5. Scheduling of the first interview.

First interviews took place in two stages. An initial email interview and 3 days later a synchronous interview. The aim of the email interview was to allow two strangers to find a language in which to have a long, very personal conversation. My informants’ style of communication, use of language, and visual cues like

emoji or emoticons in the email interview were incredibly important at this point. As an example, I offer two snippets from the initial asynchronous email interviews:

Simon, email interview 2011	Rachel, email interview 2011
<i>Oh god, so this is what it's like to BE interviewed. All the pressure! What to say! Too much! Too little! Oh noooooooo... Eh, it's transformed simple internet procrastination into EPIC procrastination, and I've met some interesting people. And seen some of them naked</i>	<i>This experience has been life-changing, erotically rejuvenating. It's given me the strongest sense that my shelf life as a sexually desirable woman has not (despite my previous beliefs) expired, and could continue for a while to come. It's taught me a lot about human sexuality and the complexity of desire and fantasy by being given a privileged access to the thoughts of others...</i>

You see here two different styles of self-expression, one more informal and playful and the other very reflexive and eloquent. My informants' style of communication gave me some idea on what style I should try to adopt at the outset of the synchronous interview.

Retrospectively, I can say that these micro-communicative steps helped foreground a dialogue, rather than a one-off episode of intensive conversation (which most interviews end up being). A dialogical relationship allowed me to keep going back to my informants for much longer and much more than I initially anticipated. I contacted them for multiple "temperature checks" in terms of their continued consent to keep being part of my study. I reached out for many additional interviews. According to most informed consent guides, the researchers should be able to foresee their need for future contact with the research participants, and this should be agreed on in advance. While I tried to do this (we agreed I could observe and analyze their blog content and archives, their public interactions, and conduct a two-part interview), I did not, in my wildest dreams, expect to be working with this community for going on 7 years, or having up to six interview conversations per person with some of my informants. It was the type of relationship we built that made this possible.

Echoing the tacit norms of the community I asked for very little personal information. This functioned as a token of my trustworthiness within the community. Some of my participants chose to give me their full names, locations, and places of employment (none of which I asked for) by the end of the first interview, but others followed up with this information later. The dialogical nature of our interactions made them comfortable to reach out with additional relevant information but also confess to details they had glazed over in the interview to save face (see message excerpt below). Thus, it was not just me, who made use of the open two-way communication between us.

I remembered something, the question I answered with the Kinsey scale ... I don't think it was completely honest. Or ... I mean, I'd still say I was a 2, I am not bi, but ... I'm trying to say that while I said I'm not into girls, then I am. And then I wanted to say that you can call

me . . . , the name I gave you is my American name, but . . . is my real name and all of my friends call me that. (Message from informant, 2012)

Existing research on trust in mediated communication has shown that it is based on (a) the users' reputation, (b) how they treat others online, (c) pre-commitment (which basically means initiation self-revelation), and (d) cultural factors (Henderson and Gildig 2004). We have addressed a–c above, but I want to briefly reiterate what (d) can mean in the case of online communities or group practices. In addition to wider (global, national, broad Internet-specific) cultural factors constraining and shaping the practices of trusting and trustworthiness, online groups and communities also have specific, localized cultures. Networked practices, which can make people vulnerable, can also create safe spaces for their members (Harris 2005; Muise 2011). Speaking up on LGBT issues can make a person vulnerable in cultures where LGBT rights are repressed but feel empowering among others who share one's views; posting images of one's body in a body positive community opens one up for shaming and stigmatization but can feel liberating in context. This means that trust is not only a lubricant for one-on-one intimacy and relationship formation; it is also one of the predominant currencies within some communities (Tiidenberg 2015; Allaste and Tiidenberg 2015). From the perspective of an ethics of care, it means that trust builds safe spaces. The researcher can try to tap into these safe spaces to create for stronger research relationships, but these spaces need to be treated with utmost care, because they create an additional layer of vulnerability. Vulnerability of a practice as such, not just people.

Strong relationships have been shown to foster empathy, which in itself decreases unethical behavior (Vetlesen 1994; Brass et al. 1998). Decety and Hodges (2006) write that psychological research defines empathy as insight into the thoughts and feelings of others. It consists of an affective response to another person and a cognitive ability to understand the other person's perspective. But empathy also makes us more vulnerable. To answer any research question pertaining to the experience, perceptions, and sensemaking of other people presumes being able to imagine what it feels like to be them. To study a vulnerable group or a sensitive topic then means to be able to empathize with their vulnerability. As the feminist philosopher Erinn Gilson (2013) argues: "the experience of vulnerability presents us with the reality of fallibility, mutability, unpredictability and uncontrollability." On the surface, this seems like an appalling subject position for a researcher to take. But this knee-jerk reaction is based on the current, neoliberal normative construal of "invulnerability as desirable and vulnerability as undesirable" (Gilson 2013, 6). This ideal of invulnerability demands devaluing those "individuals and groups who are culturally positioned as vulnerable" (*ibid*, 7). We see this daily in everyday rhetoric of victim blaming and other gestures where people, to avoid the feelings of helplessness that stems from living in a world that makes everyone vulnerable to an extent, disassociate from collective forms of vulnerability. In response to this, Gilson (2013, 178) offers what she calls an "ethics of vulnerability"; it relies on ideals of

“interdependence, affirmation of uncertainty, and working through ambiguity with hesitation, questioning and critical reflection” (cf. Pillow 2003 and Kofoed and Staunæs 2015 for work on ethics of hesitancy).

Conclusion

I want to finish this chapter with an offering of some key points and questions to keep in mind when trying to practice an ethics of care (while studying sensitive issues or vulnerable people).

1. What are your key communication competences, your style of interaction, and your preferred ways of engaging with people? Are you ready and willing to invest time, effort, and affective energy into practicing care in all that it entails? In other words, what kind of a subject position do you envision for the researcher to need to inhabit to both fruitfully and ethically answer the research questions at hand? Are you willing to inhabit that subject position?
2. What are the social norms and the technical affordances of the networked space you are studying? What are the appropriate research activities in this situation? How do these influence building and maintaining relationships?
 - (a) Perhaps helpful here are some ideas from feminist epistemology and social psychology. The just-world hypothesis, the theory of cognitive dissonance, the feminist standpoint theory, and the positioning theory may help understand our own difficulties with empathizing with some people and can guide our attempts of engaging with their stories from the position of mutuality and respect.
3. When in doubt, doubt. Whether we call this ethics of hesitancy or situational ethics, the fact is that there will be dilemmas, choices between two evils, and unexpected moments of unbearable vulnerability involved in (qualitative, networked) research with vulnerable populations. Doubt is not failure; it should be accepted and purposefully practiced. Talk to your colleagues. Read ethics texts from various disciplines. Talk to your research participants. Slow down, linger.

Finally, a dilemma, on the one hand, sensitive research and vulnerable participants should invite us to mull over, whether the research we are planning absolutely has to be conducted. In some cases, it might be that the most ethical choice is not to do it, even if we are curious, even if we think the findings would add important knowledge. Of course, if we do not, then someone else might, someone much less inhibited by an ethics of care. On the other hand, we are all vulnerable in some situations. Everything can become sensitive. That shouldn't paralyze us. While vulnerability of participants and sensitivity of topics tend to sharpen the dilemmas that all research faces, what we want, in the end of the day, is just good research. Good research that is really careful.

References

- Allaste AA, Tidmarsh K (2015) Sexy selfies of the transitioning self. In: Woodman D, Bennett A (eds). *Youth cultures, belonging and transitions: bridging the gap in youth research*. London: Palgrave
- Archer RL (1976) Role of personality and the social situation. In: Chelune GJ (ed) *Self disclosure: origins, patterns, and implications of openness in interpersonal relationships*. Jossey Bass, San Francisco, pp 28–58
- Baym NK, Markham AN (2009) Introduction: making smart choices on shifting ground. In: Markham AN, Baym NK (eds) *Internet inquiry: conversations about method*. Sage, Thousand Oaks, pp vii–xix
- Beaulieu A, Estalella A (2012) Rethinking research ethics for mediated settings. *Inf Commun Soc* 15:23–42
- boyd d (2010) Social network sites as networked publics: affordances, dynamics, and implications. In: Papacharissi Z (ed) *Networked self: identity, community, and culture on social network sites*. Routledge, New York, pp 39–58
- Brass DJ, Butterfield KD, Skaggs BC (1998) Relationships and unethical behavior: a social network perspective. *Acad Manag Rev* 23(1):14–31
- Couldry N (2012) Media, society, world: social theory and digital media practice. Polity, London
- Decety J, Hodges SD (2006) A social cognitive neurosciences model of human empathy. In: van Lange PAM (ed) *Bridging social psychology: benefits of transdisciplinary approaches*. Erlbaum, Mahwah, pp 103–109
- Duncombe J, Jessop J (2002) Ethics in qualitative research “doing rapport” and the ethics of “faking friendship”. In: Melanie C, Birch julie M, Miller J (eds) *Ethics in qualitative research*. SAGE, London, pp 108–121
- Egan J, Chenoweth L, McAuliffe D (2006) Email-facilitated qualitative interviews with traumatic brain injury survivors: a new accessible method. *Brain Inj* 20:1283–1294
- Ellis C (2007) Telling secrets, revealing lives: relational ethics in research with intimate others. *Qual Inq* 13:3–29
- Eynon R, Fry J, Schroeder R (2008) The ethics of internet research. In: Fielding N, Lee RM, Blank G (eds) *The handbook of online research methods*. SAGE Publications, London, pp 23–41
- Felzmann H (2013) Ethical issues in internet research: international good practice and Irish research ethics documents. In: Fowley C, English C, Thouseney S (eds) *Internet research, theory and practice: perspectives from Ireland*. Research-publishing net, Dublin, pp 11–32
- Flick C (2016) Informed consent and the Facebook emotional manipulation study. *Res Ethics* 12:14–28
- Fletcher JF (1966) *Situation ethics: the new morality*. Westminster, Philadelphia
- Gilson EC (2013) The ethics of vulnerability: a feminist analysis of social life and practice. Routledge, London/New York
- Gobo G (2008) *Doing ethnography*. SAGE, Los Angeles
- Gordon E (2003) Trials and tribulations of navigating IRBs: anthropological and biomedical perspectives of ‘risk’ in conducting human subjects research. *Anthropol Q* 76:299–320
- Harris A (2005) Discourses of desire as governmentality: young women, sexuality and the significance of safe spaces. *Fem Psychol* 15(1):39–43
- Held V (2006) *The ethics of care: personal, political, global*. Oxford University Press/Routledge, Oxford/New York and London
- Henderson S, Gilding M (2004) “I’ve never clicked this much with anyone in my life”: trust and hyperpersonal communication in online friendships. *New Media Soc* 6:487–506
- Hesse-Bieber S, Leavy P (2011) *The practice of qualitative research*. SAGE, Los Angeles/Chicago
- Hochschild AR (1983) *The managed heart: the commercialization of human feeling*. University of California Press, Berkeley
- Jensen KB, Helles R (2011) The internet as a cultural forum: implications for research. *New Media Soc* 13(4):517–533

- John NA (2017) *the age of sharing*. Polity, London
- Kofoed J, Staunæs D (2015) Hesitancy as ethics. *Reconcept Educ Res Methodol* 6:24–39
- Kramer A, Guillory JE, Hancock JT (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proc Natl Acad Sci* 111:8788–8790
- Lawson D (2004) Blurring the boundaries: ethical considerations for online research using synchronous CMC forums. In: Buchanan EA (ed) *Readings in virtual research ethics: issues and controversies*. Information Science Publishing, Hershey/London, pp 80–100
- Lee RM (1993) Doing research on sensitive topics. Sage, London
- Lomborg S (2012) Personal internet archives and ethics. *Res Ethics* 9:20–31
- Markham AN (2007) Method as ethic, ethic as method. *J Inf Ethics* 15:37–55
- Markham AN (2015) Produsing ethics [for the digital near future]. In: Lind R (ed) *Produsing theory in a digital world 2.0: the intersection of audiences and production in contemporary theory*, vol 2. Peter Lang, New York, pp 247–256
- Markham A (2017) Impact model for ethics: notes from a talk. Retrieved from: <https://annettemarkham.com/2017/07/impact-model-ethics/>
- Markham AN, Buchanan E (2012) Ethical decision-making and internet research, recommendations from the AoIR ethics working committee (version 2.0). Retreived from: <http://aoir.org/reports/ethics2.pdf>
- Markham AN, Buchanan E (2015) Ethical considerations in digital research contexts. In: Wright JD (ed) *Encyclopedia for social & behavioral sciences*. Elsevier Press, Oxford, pp 606–613
- Marzano M (2012) Informed consent. In: Gubrium JF, Holstein JA, Marvasti AB, McKinney KB (eds) *The SAGE handbook of interview research: the complexity of the craft*. SAGE, London
- Mattingly C (2005) Toward a vulnerable ethics of research practice. *Health* 9(4):453–471. <http://doi.org/10.1177/1363459305056413>
- Mauthner MS (2012) Accounting for our part of the entangled webs we weave: ethical and moral issues in digital data sharing. In: Miller T, Birch M, Mauthner M, Jessop J (eds) *Ethics in qualitative research*. SAGE, London, pp 157–176
- McCosker H, Barnard A, Gerber R (2001) Undertaking sensitive research: issues and strategies for meeting the safety needs of all participants. *Forum Qual Soc Res* 2:22
- McKee HA, Porter JE (2009) The ethics of internet research. A rhetorical, case-based process. Peter Lang, New York
- Muisse A (2011) Women's sex blogs: Challenging dominant discourses of heterosexual desire. *Fem Psychol* 21(3):411–419
- Noddings N (1984) *Caring: a feminine approach to ethics & moral education*. University of California Press, Berkeley
- Noddings N (2003) *Caring: a feminine approach to ethics & moral education*, 2nd edn. University of California Press, Berkeley
- Nissenbaum H (2004) Privacy as contextual integrity. *Wash Law Rev* 79:119–159
- Nissenbaum H (2010) *Privacy in context: technology, policy, and the integrity of social life*. Stanford University Press, Stanfod
- Pillow WS (2003) Confession, catharsis, or cure? Rethinking the uses of reflexivity as methodological power in qualitative research. *Qual Stud Educ* 16:175–196
- Pittaway E, Bartolomei L, Hugman R (2010) "Stop stealing our stories": the ethics of research with vulnerable groups. *J Hum Rights Pract* 2:229–251
- Preissle J (2007) Feminist research ethics. In: Hesse-Biber SN (ed) *Handbook of feminist research: theory and praxis*. Sage, Thousand Oaks
- Preissle J, Han Y (2012) Feminist research ethics. In: Hesse-Biber SN (ed) *Handbook of feminist research: theory and praxis*. SAGE Publications, Thousand Oaks, pp 583–605
- Resnick B (2016) Researchers just released profile data on 70,000 OkCupid users without permission. Retrieved from: <https://www.vox.com/2016/5/12/11666116/70000-okcupid-users-data-release>
- Shelley-Egan C (2015) Ethics assessment in different fields: Internet research ethics. Retrieved from: <http://satoriproject.eu/media/2.d.2-Internet-research-ethics.pdf>

- Suler J (2004) The online disinhibition effect. *Cyberpsychol Behav* 7(3):321
- Swartz S (2011) “Going deep” and “giving back”: strategies for exceeding ethical expectations when researching amongst vulnerable youth. *Qual Res* 11(1):47–68. <http://doi.org/10.1177/1468794110385885>
- Tiidenberg, K (2014a) There’s no limit to your love – scripting the polyamorous self. *J Psychol* 22 (1):1–27
- Tiidenberg K (2014b) Bringing sexy back: reclaiming the body aesthetic via self shooting. *Cyberpsychology* 8(1)
- Tiidenberg K (2015) Boundaries and conflict in a NSFW community on tumblr – the meanings and uses of selfies. *New Media Soc* 18:1563–1578
- Tiidenberg K (2017) “Nude selfies til I die” – making of sexy in selfies. In Nixon PG, Düsterhöft I (eds) *Sex in the digital age*. Routledge (accepted for publication)
- Tiidenberg K (2018a) Selfies: why we love (and hate) them. Emerald Society Now Books
- Tiidenberg K (2018b) Ethics in digital research. In Flick U (ed) *Handbook of qualitative data collection*. Sage (accepted for publication)
- Tiidenberg K, Gomez Cruz E (2015) Selfies, image and the re-making of the body. *Body Soc* 21:77–102
- Tiidenberg K, Whelan A (2017) Sick bunnies and pocket dumps: ‘not-selfies’ and the genre of self-representation. *Pop Commun*. Special issue on Self- (Re)presentation Now
- Vetlesen AJ (1994) Perception, empathy, and judgment: an inquiry into the preconditions of moral performance. Pennsylvania State University Press, University Park
- Wang Y, Kosinski M (2018) Deep neural networks are more accurate than humans at detecting sexual orientation from facial images. *J Pers Soc Psychol* 114(2):246–257
- Warrell JG, Jacobsen M (2014) Internet research ethics and the policy gap for ethical practice in online research settings. *Can J High Educ Revue canadienne d’enseignement supérieur* 44:22–37
- Zimmer M (2010) “But the data is already public”: on the ethics of research in Facebook. *Ethics Inf Technol* 12:313–325

Part II

Futures



Futures Introduction

32

Jeremy Hunsinger

Contents

About This Section	588
The Chapters	588

Abstract

The future of internet research is rich and vibrant. Unless the internet fragments or the field fragments, the future is solid, but some sections exist on wobbly foundations and transitioning infrastructures/topics, primarily because access to information is increasingly restricted by various corporations and government entities.

Keywords

Internet research · Future

As I am writing this, I am on my way to Montreal for the Association of Internet Researchers' annual conference. As a program committee member of this conference, and as program chair of the first conference working with Nancy Baym as the conference chair, and jokingly being AoIR's only two-time lifetime membership award member, I've had adequate time and experience to think about where the field of internet research has been and where it is going. Unless the internet fragments or the field fragments, the future looks solid, but some sections exist on wobbly foundations, primarily because access to information is increasingly restricted by various corporations and government entities.

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada

e-mail: jhuns@vt.edu

In many ways, these are dark times for internet research, the democratic institutions grounding much of the academy and academic freedom are under attack. The informational access needed to for some forms of research is being withdrawn. The world on which we exist is threatened by global warming, nationalist populism, less democratic, less equal, and worse. Even with these increasingly deplorable conditions, the internet is slowly becoming more resilient. Corporations and internet organizations are starting to realize the problems we are facing online, which have been documented for years by researchers. Bullying, bots, hate discourses, and other problems are meeting resistance, usually resistance grounded in solid research. Internet research does not merely exist to support corporations or other neoliberal institutions; it also is supporting a wide swath of our society.

Every time I attend the AoIR conference or a Society for the Social Study of Science conference, Oxford Internet Institute's Summer Doctoral Programme or even some of the smaller conference I occasionally attend, I get to meet and sometimes mentor the future of our field. The future of the field is always its graduate students, and our future is great. Many students cum professors are producing fantastic research, and many graduate students who don't go on in academia are still deeply engaged in the field and doing great work.

About This Section

Graduate students contributed to or wrote some of the chapters in this section, but the chapters are all written by engaged researchers in the field of internet studies. These chapters were either invited or chosen from an open call. The invited chapters were invited because we wanted to fill what we saw as gaps in response to the open call. In the end, due to unfortunate events, not all the invited or open call papers were submitted. The editors take the blame for this; there were significant events in each of our lives that delayed the production of this book. The papers we included in are all fitting examples of what we wanted for the futures section.

The futures section engages with the directions the field of internet research might take over the next five years. These chapters represent current methods, topics, perspectives, or fields that will expand and reinvent the field of internet research, particularly considering emerging social and technological trends. The material for these chapters defines the topic they describe within the framework of internet research.

The Chapters

The chapters in this section engage a broad array of fields. Big data, small data, capita, surveillance, convergence, network neutrality, cryptography, power, Islam, propaganda, ethics, crowdsourcing, discourse, legislation, secularity, nexus analysis, lifelogging, online politics, smart contracts, feminist collectives, cities, and algorithmic cultures. The topics do not even come close to the possibilities for the future. To

accomplish that goal, we would have needed another 12,000 pages and several more years. But as it is, these topics individually and to each other provide a map to some of the possibilities of the future, especially in the context of the first volume of the *International Handbook of Internet Research*, which was our touchstone for producing this volume.

It is clear that one of the major themes of the future is the use and nature of data. Between the foundations and futures section, we have half a dozen papers or more discussing various relations of big data, the use of data, the ethics of data. The internet is an informational medium and data is the primary term we are using for the information currently, it is essential to recognize the possibilities and impossibilities the term data constructs in our research. Another major theme of this section is social media and its contexts, the papers dealing with this theme relate to the big data chapters, but also deal with broader issues such as social organization and what happens via social media. Blockchain, cryptography, and smart contracts are a minor theme of this section, but the papers we have in this area all make significant contributions indicating fruitful directions of future research.

Similarly, online politics, especially those relating to secularism and religion, appear as a theme in this section. Given the growth of this tension in our world today, we hope these papers along with the various academic organizations studying religion and secularism in online environments will help provide some direction forward. Another area this section deals with is policy, regulation, and its multiple contexts. And as usual, there is a focus on methods and ethics in this section, as they are part of the future of all internet research.

Overall the later section, much like the foundations section, provides a series of desire paths through elements of the future of internet research. The futures section is not meant to be comprehensive. Our intention was not to give a complete map of the territory but to show you a few of the edges from which you can launch your explorations. Each of these chapters can be taken individually or in relation to others according to your own needs. They are not curated to be in any necessary order or any specific priority. You can and should read them according to your interests and hopefully there is quite a good collection to keep you interested.



Fuzzy Limits: Researching Discourse in the Internet with Corpora

33

Manuel Alcántara-Plá

Contents

Introduction	592
The Larger the Corpus, the Better?	595
Quantitative Methodologies and Corpus Linguistics	595
Mixed Methodologies: CADS	598
Discourse in Multimodal Communication	600
Redefining Units of Study	600
Redefining the Importance of Texts	601
Conclusions	604
Cross-References	605
References	605

Abstract

Internet has provided us with an amount of linguistic data without precedents. For those who research discourse and communication, it is an unexpected gift with a huge potential. However, this gift comes with important challenges we have to face. First, large corpora make us to use quantitative methods in fields where we were used to qualitative approaches. In order to change it, new strategies are being developed, such as the Corpus Assisted Discourse Studies (Baker et al. Discourse Soc 19(3):273–305, 2008; Partington et al. Patterns and meanings in discourse. John Benjamins Publishing Company, Amsterdam, 2013).

Secondly, traditional units of analysis need to be redefined. Communication through Internet has its own characteristics, and some of them do not fit in previous definitions. There are two main reasons for this regarding discourse analysis. On the one hand, current interactions are multimedia. Video, image, and sound are not necessarily subordinated to text in Internet, and researchers “need

M. Alcántara-Plá (✉)

Wor(l)ds Lab – Department of Linguistics, Universidad Autónoma de Madrid, Madrid, Spain
e-mail: contacto@inicios.es

to look beyond language to better understand how people communicate and interact in digital environments” (Jewitt. Multimodal analysis. In: Georgakopoulou S (ed) The Routledge handbook of language and digital communication. Routledge, London, 2016). Recent approaches, such as Multimodal Critical Discourse Studies (Machin. Crit Discourse Stud 10:347, 2013), move in this direction.

On the other hand, limits have become fuzzy. Interactions in Internet work in new ways, even when we call them *conversations* or *chats* (Alcántara-Plá. Estudios de Lingüística del Español 35(1):214–233, 2014). If we study them with our current units of analysis, these “conversations” will seem fragmentary and unstructured.

In this chapter, we describe these new challenges and the solutions that have been adopted so far, drawing attention to the major problems that still remain unsolved.

Keywords

Discourse · Internet · Corpus · Interaction · Multimodality

Introduction

The arrival of the Internet in our everyday lives has reshaped how we communicate in both public and private spaces. This global system of interconnected electronic devices is now omnipresent in almost any communicative context. This situation has changed our discourses in multiple ways, and the study of language and discourse in digital media “has grown into a thriving area that has earned an important place within the range of socially minded linguistics disciplines” (Georgakopoulou and Spilioti 2016, 1). Because the Internet is a fast-changing space, discourse analysts need to both draw upon their tradition of “analogue” discourse analysis and to develop new theories and methodologies (Jones et al. 2015, 1) in order to describe new phenomena.

Discourse is a concept with diverse definitions. We will be using it in this chapter as the linguistic level that deals with language in use, and its focus of analysis would be the study of particular texts in their particular contexts (Jaworski and Coupland 2014, 6). Other common definitions imply the understanding of discourses as abstract systems of values and beliefs. The study of those abstract discourses is also of great interest when analyzing the Internet. Though it falls outside the scope of this chapter, the analysis of the “linguistic discourses” is a good starting point for going deeper into the analysis of these “abstract discourses.”

The most obvious difference of the Internet discourses, also known as Computer-mediated Communication (CMC) discourses, with the previous ones is that every interaction is registered and can be retrieved. Unlike other data, texts have not suffered a typical process of digitalization. Images and sounds change when they become digital: they lose information. How much data they lose will depend on the size of the digital file. For images, it means that they can have different

resolutions; for sounds, that they have different bit rates. It is not the case for texts. Digital texts have the same amount of information than their analogical counterparts. In this sense, their registration is very reliable.

What texts do share with all digital information is that they are easily recorded and transmitted. They can be stored, copied (without loosing information), and modified. As we will see, it makes communication more complex because of phenomena such as *remediation*, but it also gives us a great opportunity for studying discourse on a large scale. No scientist would ever reject a gift like this one: to have unlimited access to the data that she needs for her research.

Since we have Internet, we talk about corpora of millions of words for any kind of linguistic study. Still holds the traditional – chomskyan – critic to Corpus Linguistics (CL) (that corpora are finite when natural languages are not), but its relevance seems different if we can access so much data that even samples of very rare uses are to be found in our corpora.

These benefits are more accessible for some linguistic levels than for others. Vocabulary studies can very easily exploit CL resources (Szudarski 2017) while Syntax studies need a more complex preprocessing of texts in order to get valuable information.

Discourse is surely the most difficult level in CL because it requires the understanding of many variables, some of them not included in the text itself. As we will see in detail, *context* is the key concept for analyzing discourses, but contexts have become even fuzzier with the arrival of digital media. In the next sections, these complexities and difficulties will be described in detail.

Since manual analysis is only feasible with short texts, we need to use quantitative approaches if we want to take advantage of the amount of data offered by the Internet. Again, it is an easier adaptation for some levels than for others. To take an example, Syntax and Semantics have a tradition of formalized theories that have provided us with grammars that can be translated into logic formulas (the kind of language that a computer is able to process). It is no coincidence that morphological grammars were the first to have computational applications (e.g., Koskenniemi 1984; Beesley and Karttunen 2003).

The tradition of Discourse Studies (DS) is typically qualitative due to the already mentioned multiplicity of variables that must be taken into account. The access to large amounts of texts is a methodological challenge. It is so in part due to the state of the art in Natural Language Processing (NLP). While computational grammars have been developed for decades (Manning and Schütze 1999), the processing of other aspects (such as framing, emotions, or interactional aspects) is much more recent and still under development. The adoption of CL methodologies in DS will help to develop these areas of NLP. In the meantime, DS researchers have to adopt it knowing that it is far from a perfect tool for their interests, but it can nevertheless give them valuable – an new – data.

The study of discourse in Internet not only requires methodological innovations, but also theoretical ones. Computer-mediated Communication (CMC) has its own characteristics, but it has been primarily approached using concepts used for the analysis of spoken and written language. Naomi Baron question “Are Instant

Messages Speech?” (Baron 2009) shows this tendency. The answer she gives, “No,” is somehow contradictory with the contents of her book and much of the existing literature, where many similarities between IM and speech are pointed out (Yates 1996; Elm 2009).

If we extend the question to the more general, “Is CMC Speech?”, we have to face an enormous heterogeneity of digital genres. Some of them are more similar to preexisting genres, specially the digital versions of previous texts: newspapers, ebooks, etc. Others, however, are new and without direct precedents: memes, tweets, etc.

Theresa Heyd (2016) has conveniently divided the history of digital genres into three eras of development. The first one, from the 1960s to the 1980s, is the beginning of Internet. Emails and Bulletin Board Systems (an early form of digital forums) were the typical genres of this period. Communication was asynchronous and purely textual, without images or sounds.

The second era took place during the 1990s with the launch of the World Wide Web (the popular three Ws). It was a time of expansion of the Internet among the general public, and new genres were created such as the mailing lists, the Internet Relay Chats (IRC), the Multi-User Domains (MUD), and the Usenet newsgroups. Text kept being the core of the digital communication, though graphical MUDs started to being developed. IRCs brought synchronous communication to the digital world. That is the reason why they were called *chats*, perceived as a new kind of conversation.

We currently are in the third era, from the 2000s, marked by the social webs and the spreading of synchronous *chats*. Social media and mobile phones are two inventions that have radically changed our relation with the Internet. Users are (and are requested to be) “more active, participatory, and collaborative” (Heyd 2016, 90). Many new genres have been created in the last two decades: blogs (e.g., WordPress), wikis (e.g., Wikipedia), social networks (e.g., Facebook), and micro-blogs (e.g., Tumbler). All of them are multimedia, and texts compete in importance with images, videos, and sounds. The most recent platforms (such as YouTube, Instagram, or Pinterest) explicitly relegate texts to a secondary role.

When we call *chats* to interactions made up of written texts, videos, and images, we are clearly using the name in a very broad sense. Most of the mentioned genres are asynchronous, even those more conversational. To take an example, interactions in WhatsApp are felt as *conversations* because they have turns, but replies do not have to be immediate. In fact, a reply can be written days after the question has been published, and usually it does not mean that apologies are required. Politeness is very different in these *conversations*. If the interaction strategies are not the same as in spoken conversations; if it is written or multimodal instead of spoken; if politeness has been redefined... Why do we call it *conversation*? The most honest answer is because the definition of the units of analysis of these new genres is still work in progress, and we use already existing concepts in the meantime.

The work of defining new units has two main challenges that will be described in detail in this chapter. On the one hand, being multimodal communication, texts cannot be analyzed independently. Words are interconnected with images and

videos, and they must be studied as such. Limits between different *modes* have become fuzzy, and the different disciplines that are focused on them should take it into account.

On the other hand, boundaries have also become fuzzy in another sense. Spoken conversations can be divided into smaller units, from the conversation itself to turns, utterances, and lexical units. However, these units are difficult to delimit in the Internet. Digital *conversations* can start in a platform and continue in a different one: a tweet might end up as part of a WhatsApp interaction or embedded in a video in YouTube. Digital information is very easily *remediated*, and it is a frequent habit in the social networks. When we approach these interactions using traditional units, we have the impression that they start and finish *in media res*.

The remainder of this chapter on researching discourse in the Internet with corpora is structured as follows: in the next section, methodological changes and challenges are described in detail, explaining how they are being adopted by state-of-the-art researches. In the last section, the discussion turns to the particularities of the online communication, and how they must be reflected in the studies of digital discourse.

The Larger the Corpus, the Better?

Quantitative Methodologies and Corpus Linguistics

Corpus Linguistics is a methodology that consists in using computers “to assist the analysis of language so that regularities among millions of words can be quickly and accurately identified” (Baker and McEnery 2015). This methodology is strongly focused on frequency information, what determines both the topics and the kind of studies carried out in CL. Questions related to variation and linguistic use are the most typical for a CL approach. Of course, a new – revolutionary – tool enables researchers to ask new questions and may lead to new theoretical discoveries. Since it provides us with “many new and surprising facts about language use” (Stubbs 2007, 127), it can change the way we understand and describe a language.

Some disadvantages of using quantitative methodologies for the analysis of discourse have already been pointed out in the introduction. Current technologies do not give us all the information we would need for a complete study. Discourse is – even in its most restrictive definition – the most complex level of Linguistics, in part because it encompasses all the other levels, and partly because it includes cognitive and social aspects.

These aspects are part of the *context*, which is a key element in the meaning-making and in the study of discourses. It is a complicated concept because contextual variables are difficult to categorize and they are nondiscrete. The power of corpora rests on the fact that we can count elements in an easy, fast, and reliable way. However, we need discrete elements in order to do so. This is the case in Phonetics, where we can count syllables, or in Lexicology and Morphology, where we can count words and morphological forms. Thomas Givón has pointed out that “context

is the real arbiter of non-discreteness” (Givón 2005, 12), and that “one task pragmatics is yet to measure up to, it seems, is how to account, in a principled way, for the organism’s amazing propensity for stabilizing its [contextual] frames, so that the appearance – or illusion – of firmament, of a stable reality, always emerges in spite of the ubiquity of contextual flux” (Givón 2005, xiii). The difference with grammar is clear. Michael Silverstein (1992) explicits it in his article “The Indeterminacy of Contextualization: When Is Enough Enough?”: “from the perspective of deterministic theories of autonomous syntactic structure, or deterministically computable notions of semantics and/or pragmatics [...] is faced with specifying rules or decision-criteria for inferencing that would model a ‘well-formed’ pragmatics of interaction in the image of syntactic grammaticality” (Silverstein 1992, 55–56).

Contexts and discourses are fuzzy while the digital world is based on the dichotomy of zeros and ones. This is why, as will be described in the next section, current applications of CL to the study of discourse are actually mixed approaches that make use of CL, but only as a first step for further analysis.

The use of CL in DS is not only due to the need of examining corpora which are too large to be manually analyzed. Though CL has some disadvantages for DS, it also has some powerful advantages. Biber et al. (1998) define the essential characteristics of corpus-based analysis in the following four features:

- It is empirical.
- It utilizes a large and principled collection of natural texts (known as *corpus*).
- It makes extensive use of computers for analysis, using both automatic and interactive techniques.
- It depends on both quantitative and qualitative analytical techniques.

The second and third characteristics are the most distinctive ones. Non-CL approaches can be also defined as empirical, and the use of qualitative and quantitative techniques is as old as texts analysis itself. To take a very simple example, the study of poetry has always used both the counting of syllables and verses, and the qualitative interpretation of the vocabulary. However, we find important novelties in the four features when they are applied to digital corpora.

CL approaches are empirical not only because they are based on real texts, but also because the chosen corpora try to be representative of the object of study. This is why large collections are used and why they must be *principled*. They counteract the known warning by Widdowson (2008) that “cherry-picking” examples could pre-determine the result of a research.

In this regard, computers provide us with another important advantage: the analysis is always consistent and reliable. Analysis could be wrong (if we have defined them in that way), but they will be always the same. It means that even wrong analysis can be of use because they will always point to the same phenomenon. Conversely, manual analysis in large corpora is unreliable in the sense that two different persons (or the same person in a different context) might analyze differently the same phenomenon. With very large corpora, this is an unavoidable problem unless we use computers.

Gregor Wiedemann (2016) points out that in the social research community “a deep divide between quantitative and qualitative oriented methods of empirical research has evolved during the last century and is still prominent” (Wiedemann 2016, 18). He highlights that it is not something new and traces it back to the Weberian differentiation between *explaining* and *understanding*. This division has led to simplistic views of the CL approaches, where “the extensive use of computers” is understood as “the exclusive use of computers.” However, as we will see, the output obtained from CL is a starting point for further analysis, not a dead end. The fourth feature enumerated by Biber et al. (1998) makes it very clear.

CL can help us in qualitative approaches in different moments of our study. First of all, computers are very helpful for the retrieving of relevant documents. There are systems that can be trained in order to identify texts relevant for the topic we are researching. Corpora can be selected from already existing larger collections or directly from the Internet. BootCat (Zanchetta et al. 2011) is a good example of software able to bootstrap specialized corpora from the web using a list of *seeds* (key terms of the requested domain).

Once a corpus has been collected, CL helps us in two different tasks. On the one hand, it provides us with representative examples of the phenomena we want to describe and with frequency data of those phenomena. On the other hand, CL allows us to automatically and consistently annotate the corpus with the relevant categories of our qualitative analysis.

On its most basic application, CL understands texts as meaningless character strings. From there, predefined patterns can be extracted, usually defined by regular expressions such as “all the words beginning by a capital letter” or “all the words ending by –ing.” Although this is not a very sophisticated methodology, it has proved to be useful when looking for concordances. To take an example, it could be employed to extract contexts where *emoticons* are used in IM, or to count frequencies of relevant terms in our corpus (e.g., how many times is used the adjective “Islamic” compared to “Muslim” when talking about terrorism? (Alcántara-Plá and Ruiz-Sánchez 2017)).

Frequency Analysis is the prototypical methodology in CL, and it can be applied in different settings. Frequencies provide us information about changes in the usage of specific vocabularies in diachronic corpora, and it can be used to extract key terms from specialized synchronic corpora using statistical measures (Baron et al. 2009). And, as pointed out with the example of “Islamic” and terrorism, it provides the necessary information for co-occurrence analysis.

Usually these methods cannot be applied on texts without a prior preprocessing, which is also possible thanks to CL. Corpora made up of Internet documents need to be cleaned before they can be analyzed. One example is the websites, which are usually written with HTML tags and scripts that are not part of the information that the readers are exposed to. Depending on the research, these tags are removed or registered in order to obtain relevant metadata (time, authors, etc.). After the cleaning, documents must be segmented in meaningful units. Most linguistic researches segment them into sentences with probabilistic models based on the punctuation marks (Palmer 2000). Similar methods are employed for *tokenizing*

the text, separating it into single *tokens*. The last step in preprocessing online texts is the *unification* of variants found in the corpus. Words might be written in different ways of spelling, which is specially common in the Internet (Crystal 2008). The goal is to be able to consistently count variances of the same lexical unit.

Both *tokenization* and *unification* need special rules for digital discourse. When tokenizing, the system should take into account, for example, the presence of *pictograms* and *logograms*. When *unifying* the texts, it should be trained for the nonstandard spellings (either unconscious or deliberate), the shortening of words, the acronyms (very common in CMC), and the neologisms (Crystal 2008). In the case of languages other than English, it is also very common to find English words or derived words from English loans (Alcántara-Plá 2017).

Further preprocessing may be carried out depending on the corpus and the research questions. A frequent step after the *tokenization* is the Part of Speech (POS) tagging, labeling every word with its morphological category (e.g., nouns, adjectives, etc.). It is a recommended step even when our research is not focused on Morphology or Syntax, since it helps us to disambiguate homonyms and to do more accurate searches.

All the referred phases have been developed in CL for decades and they are reliable by now. However, they depend on statistical data and it varies from one kind of corpus to another. It means that existing systems need to be trained with Internet documents if we want to use them. As we have seen before, the “digital document” is a broad category that includes very different texts. The training should be done for the same genre that we are researching. Of course, this training is not carried out manually, but through *machine learning* (ML), it is, with the system automatically learning from its own experience with texts.

ML is a key element for the inclusion of context in the current algorithms. As Gregor Widemann has described it, “ML approaches try to infer on knowledge structures interpretable as representations of global context by joint observation of the entire set of analysis units” (Wiedemann 2016, 50). The point here is that not only linguistic context is taken into account, but also external data (e.g., variables from the metadata or previously annotated information).

The development of new ML techniques will change the way we will approach the analysis of discourse in the – near – future. It already works for tasks such as *named-entity recognition* (the identification and classification of – abstract and physical – real-world objects) so that we can automatically know about which persons, places, or institutions a text is dealing with.

Mixed Methodologies: CADS

Quantitative and qualitative methodologies have been traditionally understood as two different and disjointed methodologies. However, we will need resources from both in order to analyze interactions as complex as the ones we found in the Internet.

Both methodologies are mixed in a single research, but usually not at the same time. Paul Baker and Tony McEnery explain how “while the earliest stages of a

corpus analysis tend to be quantitative, relying on techniques like keywords and collocates in order to give the research a focus, as a research project progresses, the analysis gradually becomes more quantitative and context-led, relying less on computer software” (Baker and McEnergy 2015, 2). This is the most common order in a discourse study based on corpus.

Though coming from very different origins, CL shares its most basic fundamentals with current linguistic theories, especially with cognitive approaches. This fact makes easy to adopt CL methods in a mixed approach. In the cognitive framework, linguistic knowledge emerges from language use. “A major aspect of human cognitive ability is the conceptualization of the experience to be communicated (and also the conceptualization of the linguistic knowledge we possess)” (Croft and Cruse 2004, 3). These *conceptualizations* emerge from the experience, and context is a key element in them. This is particularly relevant in the usage-based model (Langacker 1987; Bybee and Hopper 2001), but also present in all the cognitive approaches. Each time a linguistic form is used, it activates conceptual and grammatical patterns stored from previous experiences. Its frequency of use with a meaning and function will determine its conceptualization in our mind, and frequency is what we register in corpora.

We have already mentioned that frequency measures are the core of CL, so the connection between it and cognitive theories should be obvious. To take an example, cognitive linguists understand that concepts are not independently stored, but associated between them. This association is built upon experience: concepts that frequently co-occur are stored in the same *frame* (Fillmore 1985) or *script* (Schank and Abelson 1977). CL gives us the tools we need to empirically analyze these frames: we can retrieve all the *collocations* of a word and count how many times it co-occurs with every noun, adjective, etc. in any genre or domain.

Some researchers have started to make use of these connections using mixed methodologies for researching discourse in the Internet (e.g., Morley and Bayley 2009; Hunston 2010; Alcántara-Plá and Ruiz-Sánchez 2017). Alan Partington, Alison Duguid, and Charlotte Taylor have even given it a name as a subdiscipline: *Corpus-Assisted Discourse Studies* (CADS) (Partington et al. 2013). Their book is a very comprehensive description of this approach.

The authors explain that CADS is “extraordinary eclectic in its methodologies” (Partington et al. 2013, 328). Any study involving computational measurement of frequencies in a corpus for discourse analysis can be considered CADS. The qualitative part of the study might be carried out in many different ways such as focus groups, face-to-face or online interviews, or auto-ethnography. In all these cases, CL is useful for categorizing and analyzing the data.

As they also point out, the use of CL does not mean that the analysis can be defined as *objective*. There are many subjective elements in any CADS research even before the data is analyzed: corpora, annotations, kinds of frequencies and, of course, the research questions that have been chosen by the researchers. However, it does give us empirical evidences that can help us to support our scientific conclusions. As a result, the findings are felt as less impressionistic because anyone could look at the data and evaluate the algorithms that have been used. As we have already mentioned

in the introduction, computers have the advantage that they always give the same result if they are fed with the same input (data and processes). Therefore, CADS are easier to replicate than purely qualitative studies, and that is a valuable asset for any scientific methodology.

The Internet is a good source of corpora for CADS because there are simple ways for retrieving documents from particular websites and platforms, depending on our research question. As pointed out by Partington et al. (2013, 12), all discourse analysis “is properly comparative”: it is only possible to describe the particular features of a discourse by comparing it other references. Using CL, we can base these references on empirical data.

Discourse in Multimodal Communication

Redefining Units of Study

When analyzing spoken conversations, it is assumed that there is such a thing as a delimited unit called *conversation*. Its structure depends on this assumption: we have starts (usually greetings or introductions), we have turns (usually synchronous and ordered), and we have conclusions (with farewells). Interactions in the Internet work differently, even when we call them *conversations* or *chats* (Alcántara-Plá 2014). To take an example, a *chat* may start in an Instant Messaging system, such as WhatsApp, and end with a phone call. Besides, some of the messages of that interaction might come from social networks, such as Twitter or Facebook, or might end up in them. If we build our corpus from one of these sources and we study it with our current units of analysis, our “conversations” will seem fragmentary and unstructured. *Remediation* is the fact that media “are continually commenting on, reproducing, and replacing each other” (Bolter and Grusin 2000), and one consequence of it is that texts become *recontextualized* (Bauman and Briggs 1990) even in spaces that were not anticipated by their first producers. If we want to have a complete picture of the discourse, these properties of digital documents need to be reflected in the corpora.

Online interactions are mostly asynchronous, and users participate at the same time in different kinds of interactions. Requirements are not the same as for nondigital interactions. To be in several digital interactions does not mean that we have to be simultaneously focused on all of them. They are “on standby,” ready and available for us 24/7. It changes most expectations that we would have analyzing a spoken conversation, and issues like turn-taking and topic management need to be dealt with differently (Alcántara-Plá 2014; Jones et al. 2015). Without explicit endings, boundaries of digital interactions become fuzzy.

Complicating this is the fact that digital practices “always transverse boundaries between the physical and the virtual, and between technological systems and social systems” (Jones et al. 2015, 3). These boundaries are also becoming fuzzy: virtual realities have become augmented realities, where wearable technologies (as accessories or even implants) connect our bodies to the digital world

(Alcántara-Plá 2017, 192). Computational systems are being fed with data from the “real” world (even from our biological functioning), and this real world is being approached through the filter of the augmented reality.

A defining element of digital texts is the *hyperlink*, what means that intertextuality (in its most intense version) is a defining feature of the Internet. This intertextual nature of digital texts (Androutsopoulos 2011) expands the ways persons can interact, but also blur textual boundaries. CMC experts Rafaeli and Ariel (2007) distinguish two kinds of CMC interaction. On the one hand, they define *responsiveness* as the way electronic devices interact with human users. On the other hand, there are interactions between humans, where technology acts as facilitator. Nowadays, this is a difficult distinction because current technologies react also to human interactions: they collect data from any event and this information determines their behavior (which, in turn, may affect the way humans interact). In this sense, it is interesting the idea pointed out by Christoph A. Hafner (2015) that CMC interactions are always a conversation with the designers of the technology. It is particularly clear when playing video games, but also present in any kind of interaction with technologies that are able to react to the input they are receiving from us (even when this input was not explicitly addressed to them).

Web 2.0 websites are those that emphasize user-generated content (O'Reilly 2005). Their design makes them radically dialogic, in the sense that responses are more probable than in nondigital texts. In fact, responses are expected in many digital genres such as the publications in Facebook, where the system invites the readers to react by clicking the popular “Like” button, sharing the message, or writing a comment. We do not talk anymore about readers or consumers, but about *prosumers*, a term coined by the writer Alvin Toffler and that is currently used to refer to persons that cooperatively produce contents. The online encyclopedia Wikipedia (<http://www.wikipedia.org>) is the most popular example, where potentially everybody is both a reader and an editor of its articles.

Context must be described taken into account these characteristics of the Internet documents, and discourse analysts must develop “methods to trace the way texts (and the meanings, social relationships, and identities associated with them) change as they travel from context to context, moving across virtual and physical spaces” (Jones et al. 2015, 9).

Redefining the Importance of Texts

The importance of concepts such as “texting” and “digital literacy” show how central the words keep being in current research of the Internet. However, video, image, and sound are not necessarily subordinated to text in digital contexts. Future research should take this situation into account, and therefore adopt multimodal approaches. As Carey Jewitt has put it, researchers “need to look beyond language to better understand how people communicate and interact in digital environments” (Jewitt 2016). Recent approaches, such as Multimodal Critical Discourse Studies (Machin 2013), move in this direction.

Discourse Studies of the Internet should be clearly framed within Semiotics, the broader discipline that also investigates meaning-making and which investigations into meaning includes “how it is produced, and what sort of systems are involved; what kind of mediations need to be taken into account, and how to account for the relationalities involved, not to mention the veils that have to be lifted in the process” (Genosko 2016). In this regard, the adoption of Multimodality in DS is a step forward in the recognition of the importance of contexts in communication.

Interactions in the Internet are multimodal in the sense that different *modes* (or channels) of communication are used in order to convey meanings. Each mode has its *affordances*, a concept based on the work of the psychologist James Gibson (1979) on perception and action. He defines affordances as “all ‘action possibilities’ latent in an environment, where the potential uses of a given object arise from its perceivable properties and always in relation to the actor’s capabilities and interests (because perception is always selective)” (MODE 2012). In multimodality analysis, *affordance* refers to the potentialities and constraints of a mode (Kress 2010).

Following the foundational Social Semiotics (Halliday 1978), Multimodality studies meaning understanding that there are multiple semiotic resources – including texts – with meaning potentials, and there is an intention driving the communication.

Every mode has its own organizing principles and patterns of use, which can be retrieved and analyzed with computer-assisted methodologies. However, this is not an easy task, and these methods are diverse and in different degrees of development. It is fairly simple to extract meaningful fragments from texts, but it is still quite complex to do the same with images (if they have not been previously tagged). Besides, modes found in the Internet are not fixed, but dynamic, and tend to change very quickly. Platforms and softwares are continuously evolving and they determine to a large degree how interactions can take place. In addition, they are adopted differently in each community and culture.

Multimodal ensemble is a concept that refers to interactions consisting of more than one mode. This is the case of most communications in the Internet where screens simultaneously display many modes, sometimes building the same meaning and sometimes unrelated between them (e.g., advertisement in newspapers). In order to analyze what is displayed (or to understand any part of it), we need a systematic description of every semiotic resource. Kress and van Leeuwen (2006) propose the mapping of meaning potentials in diagrams called *system networks*. In the case of the Internet, these networks are particularly complex and dynamic.

Being so diverse, the elements of a digital multimodal ensemble and being discourses so context-dependent, IDS is an interdisciplinary research field. We have already referred to some key aspects that can articulate this interdisciplinarity. On the one hand, social semiotics, as defined by Halliday and Matthiessen (2004), is a common ground for linguists and semioticians. Most of the fundamentals of Cognitive Linguistics described before are shared with Semiotics: the importance of experience, the measurement of frequencies, the meaning partly defined as a relational network, etc. Semiotic concepts such as the mentioned *system networks* have been used to describe lexico-grammar systems Halliday and Matthiessen (2004), while James Paul Gee (2015) analyzes graphic digital games using linguistic

concepts such as Syntax, Semantics, packaging (the election of structures), and flow (“how sentences connect, combine, and pattern”). In fact, it is a basic idea of cognitive theories that language does not work differently to other cognitive processes. Jones et al. (2015, 5) make it explicit by defining *texts* as “conversations – both written and spoken –, videos, photographs, drawings, paintings, street signs, websites, software interfaces, video games, and any other aggregate of semiotic elements that can function as a tool for people to take social action.” Therefore, though tools and methods may vary from one mode to another, results can be easily made compatible in many cases because theories share the fundamentals.

Carey Jewitt (2016, 75–82) describes a prototypical multimodal analysis divided into seven steps. They are enumerated and commented below:

1. *Collecting multimodal data.* As it has already been pointed out, this is not a straightforward task in the Internet. Though digital contents are easily registered and copied, many questions have to be answered before regarding what is considered relevant data (and metadata) and what should be included as context.
2. *Viewing data.* Jewitt approach is qualitative. She talks of tasks such as “intensive repeated viewing of the data.” Because of the reasons already explained in this chapter, a mixed approach is recommended so that we can deal with larger – and more representative – corpora. Data can be automatically processed in this step so that we have a more manageable corpus. We already have approaches that, like CADS, use quantitative methods in order to get information from large corpora. However, we will need in the future new methodologies able to combine relevant information for different modes.
3. *Sampling data.* Consistent with the previous step, Jewitt proposes a manual selection of the parts of the corpus chosen for the detailed multimodal analysis. She warns that “how best to sample data – whether it is videos episodes or focal texts – is a difficult question that is intimately guided by the research question” (Jewitt 2016, 78). An automatic approach to step 2 helps us to solve this problem. Data from the corpus usually speak for itself and points to the relevant fragments. Instead of choosing fragments based on time frames or number of words, we can retrieve those that really have the features that we are looking for.
4. *Transcribing data.* There is a crucial challenge we are currently facing regarding the transcription of multimodal documents. We do not only need to define which information has to be tagged, but to do so agreeing as much as possible with the research community. Ideally we should be able to have standard annotations so that corpora can be shared. Though every research question may need different information, a common ground would help the community to have more resources. There already are guides for text encoding such as the XML-based XCES of the Expert Advisory Group on Language Engineering Standards (EAGLES) (For further information on this standard: <http://www.xces.org>), and there have been also initiatives for developing standards for multimedia/multimodal resources such as the ISLE Meta Data Initiative (IMDI) (For further information on this initiative: <https://tla.mpi.nl/imdi-metadata/>).

-
5. *Analyzing individual modes.* Typical modes of the digital communication are texts, typography, visuals and colors, sounds, video, and layout. The complexity level of its analysis depends on the corpus and the research question. It is important to keep in mind that some of the enumerated modes are actually hyper-modes that can be subdivided. To take an example, videos have images and sounds; their images may include the representation of persons, where analysis of body posture and position, gestures, gaze, etc. could be necessary.
 6. *Analyzing across modes.* Meanings are conveyed via the interplay between modes. Their layout in the screen can give us clues about the relative importance of each mode. It should be taken into account in any case that modes have different affordances, and they determine the way that information is presented.
 7. *Combining multimodality with social theories.* Mixed approaches like CADS lead to a final step where qualitative analysis is required. While steps 1–4 can be carried out semiautomatically, data is manually analyzed in steps 5 and 6, and results are interpreted – in qualitative terms – in 7.

Jewitt's proposal is a well-structured process, but many challenges remain for the future. We have pointed out the most important: definition of relevant data and relevant contexts, development of standards for the annotation, and systematic combination of the different modes analysis.

Conclusions

The invention of the Internet has meant a communicative revolution and this book is proof of it. The Internet is a very rich space, where “different configurations of modes and materialities” make possible “new kinds of social practices and alter the way people engage in old ones” (Jones et al. 2015, 3).

As this chapter suggests, there are many opportunities for future discourse analysis in the Internet. However, there are also many new methodological and theoretical challenges that have arisen with the digital world.

DS are focused on *situated meanings*, in the sense that James Paul Gee (2004) gives to this concept: meanings built upon what is relevant for speakers/listeners in a context. We have seen that, while the large amount of texts that we find in the Internet makes CL an optimal choice, the fuzzy character of the communicative contexts leaves us with important unresolved issues.

The different reasons that have been described in this chapter for rethinking conventional concepts and methodologies can be summarized as follows:

- The characteristics of the digital information make it easy to have large amounts of data for our studies (too large to be manually analyzed).
- Contexts need to be redefined for the digital world. It needs to be taken into account that:
 - Digital contents are very easily *remediated* and *recontextualized*.

- Digital interactions frequently are simultaneous, asynchronous, and with fuzzy boundaries.
- Communication transverse boundaries between the physical and the virtual.
- Intertextuality is a defining feature of digital documents.
- The distinction between authors and recipients is not relevant in many cases.
- Digital interactions are affected by the technologies not only as channels, but also as – artificial intelligence – agents.
- We need to look beyond text in order to understand digital communication because the Internet is a multimodal space.
- There are new genres in the Internet that can not be described as if they were – incomplete – versions of traditional spoken and written genres.

Whatever solutions there may be to these challenges, they can only be revealed through the work with the immense multimedia space that is the Internet. Its novelties might reshape how we approach the study of discourse, but we have also seen that many fundamentals remain still valid. In the end, meaning is built upon experience, be it analogue or digital. We may not yet have the best tools to take advantage of it, but nevertheless the Internet gives us the opportunity to look from a privileged position at a huge library of that experience. From there, researching discourse in the Internet with corpora has the potential to make a contribution to both how we approach the study of discourse and how we understand discourse itself.

Cross-References

- [An Obscure Object of Communicational Desire: The Untold Story of Online Chat](#)
- [Big Capta?](#)
- [New Media, Religion, and Politics: A Comparative Investigation into the Dialogue Between the Religious and the Secular in France and in Vietnam](#)
- [Researching Affordances](#)

References

- Alcántara-Plá M (2014) Las unidades discursivas en los mensajes instantáneos de wasap. *Estudios de Lingüística del Español* 35(1):214–233
- Alcántara-Plá M (2017) Palabras invasoras. El español de las nuevas tecnologías. Los libros de la catarata, Madrid
- Alcántara-Plá M, Ruiz-Sánchez A (2017) Not for twitter: migration as a silenced topic in 2015 Spain general election. In: Schröter M, Taylor C (eds) *Exploring silence and absence in discourse: empirical approaches*. Palgrave Macmillan, London
- Androultsopoulos J (2011) From variation to heteroglossia in the study of computer-mediated discourse. In: *Digital discourse: language in the new media*. Oxford University Press, Oxford, pp 277–298
- Baker P, McEnery T (2015) *Corpora and discourse studies: integrating discourse and corpora*. Springer, Netherlands, Amsterdam

- Baker P, Gabrielatos C, Khosravinik M, Krzyzanowski M, McEnery T, Wodak R (2008) A useful methodological synergy? Combining critical discourse analysis and corpus linguistics to examine discourses of refugees and asylum seekers in the UK press. *Discourse Soc* 19(3):273–305
- Baron NS (2009) Are instant messages speech? In: International handbook of internet research. Springer, Netherlands, Amsterdam
- Baron A, Rayson P, Archer D (2009) Word frequency and key word statistics in corpus linguistics. *Anglistik* 20(1):41–67
- Bauman R, Briggs CL (1990) Poetics and performance as critical perspectives on language and social life. *Annu Rev Anthropol* 19:59–88
- Beesley KR, Karttunen L (2003) Finite-state morphology: xerox tools and techniques. CSLI, Stanford
- Biber D, Conrad S, Reppen R (1998) Corpus linguistics: investigating language structure and use. Cambridge University Press, Cambridge
- Bolter JD, Grusin R (2000) Remediation: understanding new media. MIT Press, Cambridge
- Bybee J, Hopper P (eds) (2001) Frequency and the emergence of linguistic structure. John Benjamins, Amsterdam
- Croft W, Cruse DA (2004) Cognitive linguistics. Cambridge University Press, Cambridge
- Crystal D (2008) Txting: the gr8 db8. OUP Oxford, Oxford
- Elm MS (2009) Language deterioration revisited: the extent and function of English content in a Swedish chat room. In: International handbook of internet research. Springer, Netherlands, Amsterdam, pp 437–453
- Fillmore CJ (1985) Frames and the semantics of understanding. *Quaderni di semantica* 6(2): 222–254
- Gee JP (2004) Situated language and learning: a critique of traditional schooling. Routledge, London
- Gee JP (2015) Discourse analysis of games. In Jones RH, Chik A, Hafner CA (eds) Discourse and digital practices: doing discourse analysis in the digital age. Routledge, London
- Genosko G (2016) Critical semiotics. Theory, from information to affect. Bloomsbury, London
- Georgakopoulou A, Spilioti T (eds) (2016) The Routledge handbook of language and digital communication. Routledge, London
- Gibson J (1979) The ecological approach to visual perception. Houghton Mifflin, Boston
- Givón T (2005) Context as other minds. John Benjamins Publishing Company, Amsterdam
- Hafner CA (2015) Co-constructing identity in virtual worlds for children. In: Jones, Chik and Hafner (2015)
- Halliday MAK (1978) Language as social semiotic: the social interpretation of language and meaning. Edward Arnold, London
- Halliday MAK, Matthiessen CMIM (2004) An introduction to functional grammar. Arnold, London
- Heyd T (2016) Digital genres and processes of remediation. In: The Routledge handbook of language and digital communication. Routledge, London
- Hunston S (2010) Corpus approaches to evaluation: phraseology and evaluative language. Routledge, London
- Jaworski A, Coupland N (2014) The discourse reader. Routledge, London
- Jewitt C (2016) Multimodal analysis. In: Georgakopoulou S (ed) The Routledge handbook of language and digital communication. Routledge, London
- Jones RJ, Chik A, Hafner CA (2015) Discourse and digital practices. Doing discourse analysis in the digital age. Routledge, London
- Koskenniemi K (1984) A general computational model for word-form recognition and production. In: Proceedings of the 10th international conference on computational linguistics. Association for Computational Linguistics, pp 178–181
- Kress G (2010) Multimodality: a social semiotic approach to contemporary communication. Routledge, London
- Kress G, van Leeuwen T (2006) Reading images: a visual grammar of design. Routledge, London

- Langacker RW (1987) Foundations of cognitive grammar: theoretical prerequisites, vol 1. Stanford University Press, California
- Machin D (2013) What is multimodal critical discourse studies? *Crit Discourse Stud* 10:347
- Manning CD, Schütze H (1999) Foundations of statistical natural language processing. MIT Press, Cambridge
- MODE (2012) Glossary of multimodal terms. <https://multimodalityglossary.wordpress.com/>. Retrieved 10/10/2017
- Morley J, Bayley P (2009) Corpus-assisted discourse studies on the Iraq war: wording the war. Routledge, London
- O'Reilly T (2005) What is Web 2.0. Design patterns and business models for the next generation of software. <http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html>. Retrieved 10/10/2017
- Palmer DD (2000) Tokenisation and sentence segmentation. In: Handbook of natural language processing. Marcel Dekker, New York, pp 11–35
- Partington A, Duguid A, Taylor C (2013) Patterns and meanings in discourse. John Benjamins Publishing Company, Amsterdam
- Rafaeli S, Ariel Y (2007) Assessing interactivity in computer-mediated research. In: Joinson AN, McKenna KYA, Postmes T, Reips U-D (eds) *The Oxford handbook of internet psychology*. Oxford University Press, Oxford
- Schank RC, Abelson RP (1977) Scripts, plans, goals, and understanding: an inquiry into human knowledge structures. Lawrence Erlbaum Associates, Hillsdale
- Silverstein M (1992) The indeterminacy of contextualization: when is enough enough. In: Auer P, di Luzio A (eds) *The contextualization of language*. John Benjamins Publishing Company, Amsterdam, pp 55–75
- Stubbs M (2007) On texts, corpora and models of language. In: Hoey M (ed) *Text, discourse and corpora: theory and analysis*. A&C Black, London
- Szudarski P (2017) Corpus linguistics for vocabulary. Routledge, London
- Widdowson HG (2008) Text, context, pretext: critical issues in discourse analysis. Blackwell Publishing Ltd, Oxford
- Wiedemann G (2016) Text mining for qualitative data analysis in the social sciences. Springer Fachmedien, Wiesbaden
- Yates SJ (1996) Oral and written aspects of computer conferencing. In: Herring S (ed) *Computer-mediated communication. Linguistic, social and cross-cultural perspectives*. John Benjamins Publishing Company, Amsterdam, pp 29–46
- Zanchetta E, Baroni M, Bernardini S (2011) Corpora for the masses: the BootCaT front-end. In: *Corpus Linguistics 2011*. University of Birmingham, Birmingham



Paradoxes of the Cyber Party: The Changing Organizational Design of the British Labour Party

34

Emmanuelle Avril

Contents

Introduction	610
Below the Radar: The High-Tech Big Data Ground Campaign	611
Breaking Boundaries: The Person-to-Person Campaign	615
The Changing Design of the Labour Party	618
Conclusion	621
References	623

Abstract

Based on a longitudinal and in-depth study of the Labour Party from the early 1990s, as well as on a more general analysis of democratization linked to the use of new technologies, this chapter uses the multidisciplinary conceptual framework of organizational studies to highlight some of the ambiguous effects of the Internet on party organization. What do the changes and difficulties met by the Labour Party tell us about its ability to redesign itself so as to better “connect” with the voters? To what extent is the Obama-inspired people-centered, high-tech, decentralized ground campaign – epitomized by party activists updating databases on their tablet or smartphone in real time – the symbol of an empowered grassroots? The chapter begins with an examination of the two intertwined strands of the contemporary ground campaign, which has become both data- and people-driven, leading to a general assessment of the changing design of the Labour Party which shows how it is that, while it is widely acknowledged that current party structures are no longer sustainable, ill-thought-out organizational innovations can turn out to have detrimental effects on party unity and coherence.

E. Avril (✉)
Université Sorbonne Nouvelle, Paris, France
e-mail: emmanuelle.avril@sorbonne-nouvelle.fr

As political parties compete with other organizations for the attention of citizens, they are seen to adopt new organizational designs and mobilizing tools, triggering a chain reaction which cannot be fully controlled.

Keywords

British Labour Party · Ground campaign · Online campaign · Party members and activists · Supporters · Big data · GOTV · Community organizing

Introduction

Political parties today operate in an environment marked both by growing citizens' demands for responsiveness, transparency, and participation in democratic institutions and by technological innovation. Thus party leaderships across Western democracies have sought to "democratize" their organizations, involving a wider constituency of people into their decision-making processes so as to bring the sociodemographic and ideological profile of the party closer to that of the voters. These attempts by parties to redesign themselves are said to have given rise to a new party model, the cyber party (Margetts 2006; Pedersen and Saglie 2005), which establishes a new relationship between partisan organizations and civil society. Twenty years after the emergence of New Labour and after recent major internal organizational reforms, the British Labour Party is a case in point illustrating the way in which internal processes are being transformed through the mobilization of new Internet-based tools and techniques. As a significant feature of the contemporary campaign is the move toward digitally enabled campaigning tools, the analysis presented in this chapter focusses on the people-centered and technology-driven high-tech ground campaign in the wider context of organizational reforms aiming to increase the Labour Party's outreach. Even if the Labour Party's surprising good show in the June 2017 snap election calls for caution, Labour's 2015 resounding election defeat, the chaotic leadership election to replace Ed Miliband at the helm of the party and the unexpected victory of serial rebel Jeremy Corbyn, points to serious shortcomings in the party's strategy in redesigning itself through more open structures.

This chapter is based on a longitudinal and in-depth study of the Labour Party from the early 1990s and on material drawn from long-term ethnographic participant observation of the Labour Party both at local and national level – including annual conferences and election campaigns – as well as extensive interviews and informal conversations with a wide range of actors, from rank-and-file activists, to regional and national organizers, and to bloggers and consultants. Also drawing from a more general analysis of democratization linked to the use of new technologies, this chapter uses the multidisciplinary conceptual framework of organizational studies to highlight some of the ambiguous effects of the Internet on party organization. What do the changes and difficulties met by the Labour Party tell us about its ability to redesign itself so as to better "connect" with the voters? To what extent is the Obama-inspired people-centered, high-tech, decentralized ground campaign – epitomized by party activists updating databases on their tablet or smartphone in real

time – the symbol of an empowered grassroots? The chapter begins with an examination of the two intertwined strands of the contemporary ground campaign, which has become both *data*- and *people*-driven, leading to a general assessment of the changing design of the Labour Party which shows how it is that, while it is widely acknowledged that current party structures are no longer sustainable, ill-thought-out organizational innovations can turn out to have detrimental effects on party unity and coherence. As political parties compete with other organizations for the attention of citizens, they are seen to adopt new organizational designs and mobilizing tools, triggering a chain reaction which cannot be fully controlled.

Below the Radar: The High-Tech Big Data Ground Campaign

Academic and media attention has tended to focus on social networks and online discussions as the most innovative manifestations of digital campaigning, and much less on one of the least visible but no less significant aspects: the local ground campaign, or what Andrew Cooper, Conservative peer and former strategy director at No. 10, has called the “silent campaign” (Cooper 2015). Although there is a consensus among parties that data-driven campaigning can make a real difference to the outcome of elections, there is still very little information available about this aspect of the campaign which is largely regarded as a “secret weapon.” Yet the ground campaign is one of the areas where some of the most interesting features of technology in political parties can be observed.

The current focus on “ground campaign tactics” is usually associated with the 2008 and 2012 Obama campaigns, which are regarded as a model of big data campaigning, based on predictions about the preferences of the voters and their responses to the campaign. As with previous trends, UK parties have followed suit, with their campaigns becoming increasingly reliant on analyzing large and detailed datasets so as to profile voters, with the idea that this would constitute the ultimate competitive advantage. Thus in the 2015 general election campaign, the main UK political parties engaged in an “arms race” to “leverage ever-growing volumes of data to create votes” (Nickerson and Rogers 2014: 51). The focus of UK parties on new technologies has been established since 2005, when real attention was first paid to party websites and email campaigns were used for the first time. The 2010 campaign was then dubbed the “first *digital* election,” with the vast majority of comments focusing on really innovating technologies, such as blogs and social networks. Party websites, despite not being a new feature, also drew some attention because of efforts to turn top-down communication channels designed for purely marketing purposes into more interactive platforms. Indeed, parties started to adopt applications allowing for horizontal peer-to-peer communication and offering some feedback features. In this campaign, the Labour Party, regarded as generally less adept at exploiting the new web 2.0 tools than the Conservatives, used social media, particularly Twitter, mainly to mobilize their activists and supporters with applications such as #LabourDoorstep or #Mobmonday. The #LabourDoorstep platform, which was created in the run up to the 2010 election, invited members and volunteers to share their doorstep stories and images. LabourDoorstep was active again in the

2015 campaign and presented as a space where activists could share the tales of doorstep canvassing that “shape our 2015 election memory.” However, not only was the platform’s reach rather limited, with only 243 followers and 126 tweets in total as of 12 July 2015, but these crowdsourcing experiments could also backfire badly, with one video of terrible canvassing gathering an exceptionally high 546,860 views on Facebook. Launched in January 2010, #Mobmonday aimed to organize phoning sessions every Monday evening for a different key marginal seat each week. Labour activists and volunteers could make the calls on the Membersnet Virtual Phonebank. Activists were encouraged to tweet in between phone calls using the #Mobmonday hashtag to create a virtual online community “where our twittering canvassers can come together to talk about the experience.” The “hordes of activists” making contacts with voters in this way were supposed to make up for Labour’s lack of funding and help compete with the Conservatives’ “glossy leaflets and expensive advertising.” The experiment did not seem to have been repeated in 2015 although the use of phonebanks had by then become ubiquitous.

Despite these efforts, the general view was that UK parties had failed to fully exploit the potential of the web. Thus the 2015 general election campaign was in turn described as the “first *really* digital election,” which raises the question of defining what made it different from previous campaigns. There were few qualitative improvements in terms of social media, with parties still “broadcasting” to the already supportive. The June 2017 snap election saw the Labour Party clearly leading in terms of online activities: 37% of Labour Party members tweeted or retweeted messages supporting their party or its candidates on Twitter, as opposed to 26% of Conservative members. @jeremycorbyn was the most retweeted and most mentioned political account in the campaign, and Labour hashtags such as #VoteLabour ranked as the third most used after informative and media labels such as #GE2017 (Segesten and Bossetta 2017). Although this partially accounts for the high turnout in young voters (Bale 2017), it must also be stressed that social media activity at election time still tends to engage a “microcosm” which, despite Labour’s recent success in reaching out, cannot be regarded as representative of the wider electorate (Lilleker 2015). Therefore the most distinctive yet hidden feature of the 2015 and 2017 campaigns was to be found in the constituencies’ high-tech campaign, micro-targeting, and community building (Anstead 2015: 68).

This is in keeping with a worldwide trend in party campaigning. Writing about the USA, for example, and based on a close analysis of the campaigns of two congressional democratic candidates in 2008, Nielsen explains that “political campaigns today are won or lost in the so-called ground war – the strategic deployment of teams of staffers, volunteers, and paid part-timers who work the phones and canvass block by block, house by house, voter by voter” (Nielsen 2014: book description). In Canada, the New Democrats’ *Forward* campaign webpage, which bears the heading “modern campaign tactics for 2017,” focuses on learning how to deliver “people-centered, data-driven campaigning,” with emphasis being placed on the “ground game” and technology. In parallel, a wealth of consultancies, many of them US-based, have sprouted, offering their services to political parties. Leading such organizations are Blue State Digital, whose ambition is to “build and galvanize

“communities” and who describe their work with the Labour Party as developing “a grassroots, supporter-centered strategy at the core of the plan to revive the institution, grow membership, and win elections,” and the Grassroots Campaign (the organization behind [MoveOn.org](#)) which proposes to “place trained organizers on the ground to build a network of volunteers, train precinct captains, and establish volunteer-driven neighborhood outreach efforts.” It is symptomatic that the Conservative Party called upon Jim Messina while the Labour Party hired David Axelrod, both of whom had been involved in managing Obama’s campaigns, to help them run their 2015 campaigns (Wintour 2010). Therefore the move toward “big data” campaigning, which involves, apart from the key dimension of fundraising, the collection of data to give politicians a more detailed picture of voters, is a global trend.

Indeed, data collection was a noticeable feature of both the 2015 and 2017 UK campaign, with parties urging visitors to enter their personal details and voting preferences before navigating on their websites. Ahead of the 2015 election, Labour upgraded its voter database, the Contact Creator System, an online tool equally liked and reviled by activists for its glitches, accessible from anywhere with an internet connection and linked with the Labour Party’s other new media tools, such as Print Creator and Email Creator. Print Creator allows key voters identified through Contact Creator to be targeted with direct mails and leaflets about Labour Party activity. Email Creator allows the user to collect a list of email addresses on the Contact Creator system, email voters, and monitor the response rate from targets. Party members and activists were provided with a username and password as well as voter contact details, preferences, interests, past voting behavior, and demographic/socioeconomic information. Thus voters could be selected on the basis of Mosaic groupings which categorize people according to their likely interests and activities based on their postcode (a service provided by the company Experian, which specializes in socioeconomic analysis using geo-marketing techniques). Voter information could be cross-referenced so campaigners could find out not only where their target voters lived but also how often they had been contacted, how they said they preferred to be contacted, and what responses they had provided when contacted. Contact Creator was updated ahead of the 2015 campaign to make it more user-friendly so it would be easier to use by lay activists. This was taken a step further in the 2017 election. Whereas party activists had been disappointed that the 2015 update had not included the ability to use the system on mobiles and tablets, these limitations had been lifted by the time of the next general election campaign as Momentum gave members and volunteers access to the Call-for-Corbyn canvassing app on laptops, tablets, and smartphones. Other innovative features included Momentum’s My Nearest Marginal app, which allowed supporters to find their nearest marginal seat by supplying their postcode and to travel to these areas to join canvassing sessions with other members, as well as Carpool Momentum, which arranged rides for canvassers (under the UK first-past-the-post system, where well over half of the seats are “safe seats,” i.e., seats in which the outcome of the election is almost certain, the campaign focuses on floating voters in a few marginal target seats).

The Conservatives acquired in 2014 a new database system called VoteSource, which made it in theory possible for canvassers to access it from mobile devices on the doorstep and which was supposed to be much faster than its predecessor, the old Merlin (Managing Elector Relationships Through Local Information Networks) system, which had a habit of breaking down at crucial times (Ridge-Newman 2014). However, the new system was hastily built in-house by a small coding team at head office, had never been previously tested, and was made available to local parties just a few months before the election. As a result, on election day, both the old Merlin and the new VoteSource systems were run alongside one another, with less than satisfactory results, party activists often having to resort to paper and pen (Abbott 2015). In 2017, lack of boots on the ground, a too centrally controlled campaign and reliance on flawed data, could not be outweighed by the heavy financial investment in social media (Wallace 2017). In contrast, the Liberal Democrats, following the party's 2010 general election review, had adopted a new electoral database software as early as 2011, choosing to purchase the well-established off-the-shelf web-based VAN (Voter Activation Network) software, the platform first deployed by the Obama 2012 campaign under the name Votebuilder and by the Liberal Party of Canada as Liberalist, which had just been merged with the existing NGP system. The new system, generically known as NGP-VAN, was given the name CONNECT (Pack 2011). Despite some of the limitations mentioned above, these various tools have brought the "digital" campaign to a new level, with databases now a "prime element" in building "politically oriented applications" (Pinheiro 2009).

Although this kind of data, painstakingly collected on doorstep over the years by party volunteers, has always existed, the exploitation of data relating to voter preferences has been rendered much more efficient by technology. Where the data used to be collected by party activists armed with a clipboard and a pen, this is now driven by sophisticated software and fed by the vast amounts of data provided by market specialists. There has thus been a considerable quantitative shift since the early days of targeted campaigning. The 1997 Labour landslide had been partly attributed to effective campaigning in target seats, which had allowed to identify potential voters, persuade target floating voters and switchers, and, most importantly, "get out the vote" (GOTV). But whereas parties traditionally had to rely on the electoral register made available to all political parties, as well as on the data collected on the doorstep, as their main sources of information on voters, by 2010, the ability to draw from the information purchased from geo-marketing specialists had rendered micro-targeting much more efficient. The ability to capture the data provided by the voters themselves through their online activities constitutes the latest step in the quest to build ever more sophisticated databases.

On one level, there is room for saying that the digital tools are just rendering classical campaigning tools more efficient since data analytics only supplement and enhance existing grassroots campaign. It seems that the growing impact of data analytics in campaigns "has *amplified* the importance of traditional campaign work" (Nickerson and Rogers 2014: 71, italics mine), making the ground campaign more competitive with mass communication forms. But the fact is that the changes in campaigning tools and techniques are having a profound effect on local parties and

members. Indeed, the advent of the data-driven ground campaign requires increasingly professionalized and highly specialized activists as the building of databases of sympathizers and potential voters requires fairly high technical competencies. This is a far cry from earlier fears that members would lack the skills to run the software. Smith (2000: 76) thus recalls the Labour Party's doubts regarding the technical competence of constituency parties leading to the use of their Elpack system – Labour's first electoral database – being suspended for the actual polling day on 1 May 1997, forcing local parties to use traditional paper-based systems instead. In any case, the changing nature of constituency campaigning is progressively transforming the relationship between local activists – turned part webmasters – and the central party on the one hand and between activists and the looser new categories of supporters, on the other.

Breaking Boundaries: The Person-to-Person Campaign

The second strand of “ground campaign tactics” stresses the role and importance of interpersonal communication as opposed to the national air campaign. The Labour Party website in 2015 claimed that the party was in the process of building “the biggest people-driven campaign in British political history.” The then editor of the LabourList blog explained that since “there isn’t the money that there once was for general election campaigns,” members had become “far more important than they [had] been before” (Ferguson 2013). This meant, he wrote, that they needed to be empowered, which technology was a means to achieve. It must indeed be noted that micro-targeting campaigns require large initial capital investments, which some impoverished parties like the Labour Party have been struggling to meet. Labour activists complained about being generally under-equipped during the campaign. The issue of cost also accounts for the Labour Party campaigning strategy to make the most of its comparatively large member base (estimates suggested that in 2014 the Conservative Party had 134,000 members, the Labour Party 190,000, and the Liberal Democrat Party 44,000; Keen 2014) and to place emphasis on the person-to-person campaign. This was compounded by the fact that the main lesson the Labour Party had drawn from the 2008 Obama campaign was that the key element of election campaigning was peer-to-peer communication, the Internet being just a tool among others to generate the kind of conversation which would engage a wider community. This approach was consolidated and amplified in the 2017 election campaign in which voters were reached both online and on the ground through campaigning techniques deployed by both Labour HQ and a range of Corbyn-supporting groups.

The Labour Party had already experimented with online community building (Avril 2018), first in 2003 with the Big Conversation project, heralded by the Labour government upon its launch as the “biggest ever consultation exercise in the UK,” to debate the challenges facing Britain through online and offline forums throughout the UK. The Big Conversation did generate a few ideas to be included in Labour’s 2005 manifesto but soon disappeared from view. It was followed in 2006 by the Let’s Talk initiative, a consultation exercise on public service reform which

consisted in “listening to the opinions of people inside the party and the interests of people outside of it.” Officially, the principle was to engage the wider public in the party’s policy formulation. In parallel, the party had launched a socialization site for members, called Membersnet, a feature of which was to provide each member with their own blog and each local party with its own discussion forum. The members of the network were also given access to general discussion forums on policy issues, and the platform was intended to become accessible to nonmembers. However the recent evolution of Membersnet shows it to have become more restrictive and in the main limited to allowing party members to update their registration details, organize events, and create campaigning material from templates. The system was updated in 2013 to make it more user-friendly and to allow members anywhere in the UK to carry out voter ID activities as well as enter the information thus obtained into the Contact Creator system. Membersnet must therefore be conceived of more as a gateway to access Labour’s campaigning applications than a means to build a community of party members. Nevertheless the idea of opening this restricted area to mere supporters heralds the 2014 move to give registered supporters a say in the leadership election (following an internal review on procedures, led by Ray Collins – Collins 2014 – a special conference held on 1 March 2014 in London approved the report’s recommendations which included the abandonment of the Electoral College for leadership elections and the adoption in its place of full OMOV of members and affiliated and registered supporters).

These short-lived experiments, which an optimist would describe as examples of “policy outsourcing” (Gauja 2013) but which were mocked both inside and outside the party as gimmicky, paved the way for Labour campaign manager Douglas Alexander applying these principles in 2010 to an innovative campaigning tool, the so-called “word of mouth” campaign, asserting that “it is people, not posters, that will win this election.” This person-to-person approach, which marked a breakaway from the tools which had delivered the 1997 historic victory, such as sound bites and rapid rebuttal, was presented as vastly superior to traditional campaigning: “The Conservatives” – Alexander said – were “fighting a broadcast election in a networked age.” There ensued a shift in campaigning and a new focus on the grassroots who had been rather undervalued until then, with emphasis being placed on opening the party up to new categories of campaigners. Such shift, largely dictated by economic necessity, may also be taken to reflect a transition from what Joe Rospars, founding partner of Blue State Digital, describes as a move from *big* data to *smart* data. In any case, it is based on the idea that marketers should not just be seeking more data but better relationships. However this kind of people-intensive ground campaign involves the building of the required organizational infrastructure. It demands recruiting and training vast amount of people and empowering them to reach out and build communities of “supporters,” which both Labour and the Liberal Democrats did using a version of the community building NationBuilder software – also first used by the 2008 Obama campaign – which could be customized to suit the needs of each local party.

The logic at work behind the idea of an empowered grassroots is that democratization is about opening up party structures to a wider constituency. In this view,

decision-making should no longer be the preserve of paid-up members but should include instead more ordinary members in an effort to better reflect the full diversity of civil society. The Labour Party had pioneered this trend when Tony Blair had launched a reflection on the use of the online campaign, which had led to the creation, in 2004, of the Labour Supporters' Network, a mailing list whose objective was to persuade the mass of hesitating people to take the step of joining. The point, therefore, was to attract people who were put off by the idea of formally joining a party or who did not wish to engage in traditional structures of participation. The Labour Party website then described this network as "a means for people to register their support without having to join." Registration was free and allowed supporters to be kept informed by the party, with contact being made mainly through emails. Beyond the fundraising aspect, the idea behind the scheme was to entice members of the public to participate in the party's activities, in particular in some of the less intensive tasks such as taking part in consultations or forwarding emails. But an essential dimension of the network had to do with elections, as the expectation was that these supporters would in time become full members. The ambition of this renewal strategy, which failed to materialize, was to recruit 200,000 supporters before the end of the year, with an expected conversion rate of 20%. This approach was revived in the run up to the 2015 election and extended to all major UK parties who all sought to build networks of volunteers who were not just seen as potential members or donors but also as electoral communication agents for the party.

Thus the shift to community organizing was more incremental than it seems. Officially, it is the 2008 Obama campaign which originally rekindled interest in this old-fashioned practice which finds its source in the USA of the 1930s. Community organizing, first brought about by Saul Alinsky (1971), promises to turn the grassroots organization outward and provide it with deeper roots into the community, a move which entails the adoption of specific mobilization techniques and organizational style. In the Labour Party, the explicit focus on community organizing originates from the David Miliband 2010 leadership campaign which saw the launch of Movement for Change, an organization which has since been sitting alongside the Labour Party. This organization, described by one of its members as "the community organizing wing of the party," claimed in 2013 to have trained over 2,000 community organizers across the country and prided itself during the 2015 campaign on having been influential in shaping its overall strategy. At the same time, in 2011, probably in a bid to distance himself from his brother's organization, Ed Miliband asked US campaigner Arnie Graf, "king of the ground game," to undertake a review of the Labour Party organization and campaign structures. Graf is credited to have been the first to suggest establishing a Labour Party Supporters' Network, where individuals who did not wish to become full members might be entitled to vote in Labour selections in exchange for a small fee. The idea that the party would be able to tap into the vast reserve of supporters in times of declining membership was a compelling argument. A sign that this was taken on board by party headquarters was the production of an 88-page community organizing manual to provide campaigners with "the tools to rebuild the Labour Party as a community-based, campaigning organisation" (Labour Party 2012).

There is however an ongoing controversy in the Labour Party about the desirability of turning party members into community organizers. Summing up the cases for each approach, a local election campaign agent writing for LabourList (Costa 2012) thus explains that the terms of the debate are in fact skewed: on the one hand, supporters of voter ID stress that “the collapse of political engagement makes the process of identification and get out the vote sufficient for victory” and, on the other hand, advocates of the community organizing approach argue that voter depolitization and alienation mean that “we should drop the mobilizing approach in favor of building warm, organic relationships with communities.” Such polarization, he argues, is too stereotypical, when what is required is an integrated approach combining the two models of campaigning. The contempt shown by proponents of community organizing for what they see as “mechanistic” GOTV techniques may be misplaced when the wide range of campaigning activities available reflects various levels of engagement. Voter ID and GOTV techniques, which can make a difference to the outcome, are very accessible to lay members and supporters who may have little time to devote to the campaign, leaving more time-consuming community organizing activities up to dedicated core members. Indeed, Labour’s surge in the 2017 election can be said to have resulted from the campaign organizers’ ability to “turn a swollen base of activists into proper campaigners,” thanks to innovative tools such as Chatter, which allowed party activists “to have proper text exchanges with people they canvassed, rather than dispatching them blunt, campaigning messages,” and Promote, a tool which combined Facebook information with Labour’s voter data to allow party activists to send locally based messages to specific sections of the electorate (Savage and Hacillo 2017).

The key principle behind these experiments, which is to reconnect the party with the voters by creating a community of like-minded people, seems to have some merit since it may help generate a bond between party and voters. In this sense, Labour’s early Supporters’ Network was not just a very economical recruitment tool. It also started to redraw the boundaries of party membership, a dimension which has now become the controversial central plank of Labour’s approach to membership. Thus the opening up of the party beyond the circle of full party members is bound to the idea of turning traditional party structures into new organizational forms.

The Changing Design of the Labour Party

Political scientists have shown how declining party membership across Europe has brought about a new organizational model, the so-called “cartel” party (Katz and Mair 1995), in place of the traditional mass party. This party model is characterized by a move by parties away from civil society toward the state in parallel with citizens preferring to invest their efforts in organizations other than parties. Party leaders focused on vote and office-seeking activities therefore turn to the state for their resources rather to their members who thus end up playing mere servicing roles, particularly in the conduct of campaigns. But this view of the long-term evolution of contemporary parties needs to be reassessed in the light of recent changes. Mainstream

parties such as the Labour Party, whose organization has been, traditionally as in all mass parties, a tool of social integration, are today faced with increasing difficulties in retaining the link with the voters and find themselves under pressure to find new ways to connect with civil society. As societal interactions are moving online, web-based technologies provide an opportunity for such political organizations to increase their “nodality” (Hood and Margetts 2010), i.e., their ability to sit at the center of information and social networks. In this sense, the “cyber” party, a main feature of which is the development of technologically aided relationships between party and voters in place of formal membership (Margetts 2006), is an organizational response to the growing gap between parties and civil society. Smith (1998: 184), exploring the new organizational forms arising out of the use of web-based technologies, has identified the emergence of the “leadership party” model, in which technology is used to bypass the members. A common feature of these models is that whereas, in the early days of internet campaigning, the use of new technology within party organizations tended to be seen as complicating membership involvement, the defining feature of cyber parties is the belief that the use of web-based technologies will widen and deepen the relationship between voters and party far better than a traditional conception of membership ever could.

In parallel, political parties are adapting their structures to better reach out to the community. Indeed, in borrowing community organizing tools and methods, the stated aim of Labour’s Movement for Change was a transformation of party structures so as to make the organization more fluid, porous, and responsive to the public. In the same vein, Iain McNicol (2013), Labour’s General Secretary from 2011 to 2018, asserted before the election that community organizing was the key to victory and would reshape the culture of the party. As protest movements are making the organizational transition which goes with the exercise of power, mainstream political parties are adopting features and tools from social movements. Whereas the Greek SYRIZA and the Spanish Podemos are social movements which became institutionalized, the Labour Party may be evolving in the other direction. Leadership candidate Andy Burnham (2015) and deputy leadership candidate Tom Watson (2015a) both made this explicit during their campaigns. Since social movements have been much more successful than parties in getting citizens to be politically active, the appeal for declining parties is obvious. In cyberspace, partisan organizations are able to tap into the vast reserve of supporters and to aggregate interests across ethnic and social divisions. Successful campaigns such as the Scottish 2014 Yes campaign and Jeremy Corbyn’s two leadership campaigns in 2015 and 2016 have in common a power to draw a variety of people including, crucially, young voters. Thus the advantages of borrowing some of the organizational features from social movements may be seen to outweigh the risks.

However the Labour leadership had tended to deploy these tools and techniques in a way which awards no strategic autonomy to local parties. This seems to run counter to long-term trends in party organization. In her seminal study of election campaigns, Norris (2000) defined the postmodern campaign as nationally coordinated but operationally decentralized and involving more direct contact with the voters, thus marking a return to the pre-modern campaign. However Denver and

Hands (2002) question Norris's characterization of the modern campaign as being tightly controlled by the center, showing that in fact in the heydays of the modern campaign, in the 1960s and 1970s, UK party campaigns saw little involvement from the national party. An illustration of this was the difficulty experienced by headquarters in moving activists around to campaign in target seats, as members preferred to campaign in their own areas. From the 1992 election, the shift began, with central parties paying more and more attention to constituency campaigning in target seats. In the Labour Party, this process culminated with the 1997 Operation Victory, where party activists were bussed around the country to campaign in the 42 target seats and paid agents were imposed from Millbank in all key seats. Considering the massive increase in central controls observed under New Labour, which are still firmly in place, it would be more accurate to characterize the current campaigning model as a perfected form of the modern campaign rather than as a truly decentralized model, when all that is being decentralized are the execution functions while the strategic functions continue to be ever more highly centralized.

Rather than being proof that the opening up of party structures is wrong in principle, what the difficulties experienced by the Labour Party show above all is that the structural reforms were not properly thought-out and have been in the main introduced to achieve specific outcomes by stealth (Minkin 2014). Indeed, organizational reforms such as those adopted under New Labour were designed to provide the leadership with the maximum amount of strategic autonomy and help bypass local parties which might not share the leadership's objectives. Similarly, it is clear that emphasis on community building has stopped short of providing members and supporters with genuine opportunities to shape policy development. The 2011 *Refounding Labour* document urged local parties to involve registered supporters in policy consultation and social events; yet *consultation* and *involvement* do not amount to *influence*. There has been a move away from collective decision-making processes to individual processes, with the generalization of one-member-one-vote as the preferred voting method, since it was thought that a wider and spatially dispersed membership, recruited via electronic registration, would be less likely to challenge the positions adopted by the leadership. Interestingly however, this has not been the case, resulting instead in a loss of central control, as other agents have been able to use the new processes to advance their own ends. This is epitomized by the rise of Momentum, which was created outside the Labour Party as a movement to support of Jeremy Corbyn's leadership campaigns and whose explicit aim is to reshape the party with the promise of increased grassroots influence (Avril 2018). Taking full advantage of the semi-open primary system established by the March 2014 leadership election reform which introduced a system of one-member-one-vote of members and, crucially, supporters (the latter were only required to pay a £3 fee to be allowed to take part in the election), Corbyn's candidacy drew to the party a wave of people whose profile did not fit that which has been anticipated by the previous leadership (according to official figures, by 10 August 2015, close to 113,000 supporters had signed up to take part in the election, for 55% of whom Corbyn was the preferred candidate. Overall the Labour Party more than doubled its membership, reaching a total electorate of 553,954).

The full significance of the opening up of structures has not yet been fully taken on board by political parties for whom internal party reforms have in the main been part of a rebranding work, spearheaded by more interactive jazzed up official websites, social network pages and groups, and various other efforts to create virtual communities. But such experiments have in the main been merely cosmetic, offering no real interactivity to members (Avril 2013). Isolated experiments do not add up to an integrated high-level new media strategy. If, as Momentum organizers claim, digital media have the potential to turn Labour into an open mass membership bottom-up community movement, this can only be achieved within the framework of a coherent strategy. In order to truly renew, a redesigned Labour Party needs to remove obstacles to participation and give members the tools to self-organize. Since the centralized command-and-control style of party management is fundamentally incompatible with the building of powerful, effective online communities, this requires party leaders to unlearn the techniques which made New Labour so successful. But old habits are proving hard to shake. Even though Corbyn is seeking to assert the primacy of the grassroots, to whom he owes his victory, over the parliamentary, regularly consulting the membership, this will also need to translate into a greater autonomy for local parties. Yet the quantitative expansion of the membership should come with some qualitative changes to processes since simply opening the structures without clearly defining the scope and remit of the new processes can only generate chaos and confusion. Therefore there is a need for the party to design new decision-making tools adapted to the new structures.

Conclusion

The modern style of election campaigning combines traditional person-to-person contact with sophisticated, big data analytics to allow political parties to identify, target, and mobilize supporters in ways that, without being completely novel, are much more efficient than in the past. But the heavy Labour Party defeat on 7 May 2015, despite the supposed superiority of both its ground campaign (Harman 2015) and its social media campaign (Durrani 2015), followed by the June 2017 unexpected surge, cautions against drawing hasty conclusions. Labour's 2015 defeat may have indicated, on the one hand, that on balance the mass communication campaign via traditional media was so much tilted in favor of the Conservatives that it dwarfed any advantage that the Labour ground campaign may have had and on the other hand that the Conservatives' silent, hyper-targeted campaigning turned out to be more efficient than Labour's (Wallace 2015), possibly with "paid-for calls, advertising and direct mail to compensate for Labour's bigger activist base" (Akehurst 2015). The Labour Party's growing membership base and spectacular turnaround in 2017 may be a sign that, despite initial derogatory comments about its swelling army of "clicktivists," Labour, "rather than dissolving, [...] is going through a long-term process of adaptation to postmaterial political culture and is leading the way in new organizational strategies that combine online and offline citizen activism" (Chadwick 2017).

In any case, the identity crisis experienced by the Labour Party illustrates some of the key dilemmas of digital governance: firstly, the need to balance the innovation and value derived from open and shared public platforms with the security and reliability of closed, private systems; secondly, the need to reconcile the protection of the rights and values of empowered individuals with the tools required for the collective entity to function adequately; and, finally, one underlying factor that lies with the unintended consequences of organizational change, which arise from the gap between the strategic and operational levels: ill-conceived organizational reforms may backfire and negate their intended objectives. Scarrow stresses, for example, that changes in affiliation options are not the result of thoroughly considered strategies but more of a “bandwagon response to trends in technology and marketing” (Scarrow 2015: 136), which explains why organizational reforms seem to have largely escaped leaders’ control.

The use of “statistical thinking” to devise campaign strategy has now become pervasive, and the impact of extensive data mining and predictive voting on party organization is deeply felt, thus confirming Sacha Issenberg’s description of the advent of “a radical new data-driven order” (Issenberg 2012). At a first level, data-driven politics is hailed as facilitating grassroots democracy in that it enables parties to acquire a better understanding of voters’ priorities and concerns. As politicians are seen as too detached from voters, so the argument goes, the use of data can force more responsive and more representative politics (NESTA 2014). Yet data mining for political purposes also raises issues of privacy. In the early days of “big data,” Labour’s rapid rebuttal computer system Excalibur was criticized as Big Brother despite in effect working like a giant electronic library. In the present days of micro-targeting, there is a growing tension between extensive data sharing about voters’ lifestyles and consumption habits and the very principle of data protection, raising concerns about what some call “voter surveillance” (Bennett 2014). Another worry is that this scientist approach to political campaigning, which results in targeting ever narrower segments of the population (Wring 2004), may reflect a move away from the persuasion model of campaigning to one where all that matters to parties is just finding their own supporters (Gibson 2015), thus leaving aside large swathes of the population. Such concerns revive the long-running criticism of the web being a mere echo chamber (Sunstein 2001; Lilleker and Jackson 2011) rather than a place where the whole of civil society can be brought together. Critics have indeed stressed that one of the shortcomings of Labour’s 2015 ground campaign tactics was that it rested on a 1950s model of campaigning where the organizational focus was on getting out the vote and targeting the already supportive (Charlwood 2015). This would seem to go against the very principle of more open structures and raises the possibility that “the science of winning elections,” far from drawing voters back to partisan politics, may in fact contribute to turning them off even more (Bennett 2014: 16).

New technologies and decision-making processes have a tendency to rearrange existing organizational patterns in ways not foreseen by their creators. What becomes of the Labour Party will therefore depend on its ability to properly harness the potential of informal networks so as to channel the enthusiasm of its army of new members into vote-winning activities. The opening up of structures to volunteers and

the increased use of internet tools are the first evolutionary steps. Among the proposals put forward by candidates to the 2015 leadership and deputy leadership of the party, to reconnect the party with its lost voters, was the creation of digital Labour branches with online polling and voting (Watson 2015b). Others have called for “de-commissioning machine politics” (Warren 2015) and the discarding of a centralized organizational structure no longer fit for purpose. It has become clear that a political party wishing to interact with online communities must adapt to the fundamental change required by web 2.0 technologies and design power structures accordingly.

References

- Abbott P (2015, August 10) Scrap VoteSource. Empower the digital team. Sync databases. How to maximise CCHQ’s use of IT. Conservativehome. <http://www.conservativehome.com/thecolumnists/2015/08/95686.html>. Accessed 21 August 2015
- Akehurst L (2015, May 26) An anatomy of Labour’s defeat. LabourList. <http://labourlist.org/2015/05/an-anatomy-of-labours-defeat/>. Accessed 9 July 2015
- Alinsky S (1971) Rules for radicals: a pragmatic primer for realistic radicals. Random House, New York
- Anstead N (2015) Was this the ‘social media election’? We don’t know yet. In: Jackson, D, Thorsen, E (eds) UK election analysis 2015: media, voters and the campaign. Centre for the Study of Journalism, Culture and Community, Bournemouth University, p 68. <http://www.electionanalysis.uk/>. Accessed 16 Aug 2015
- Avril E (2013) The evolution of decision-making in the British Labour Party: from grassroots to netroots ? In: Avril E, Zumello C (eds) New technologies, organizational change and governance. Palgrave Macmillan, Basingstoke, pp 102–116
- Avril E (2018) The ‘movementisation’ of the Labour Party and the future of labour organising. In: Avril E, Béliard Y (eds) Labour united and divided from the 1830s to the present. Manchester University Press, Manchester, p 254–270
- Bale T (2017) Was it the Labour doorstep or the Labour smartphone that swung it for Jeremy? In: Thorsen, E, Jackson, D, Lilleker, D (eds) UK General election analysis 2017: media, voters and the campaign. Centre for the Study of Journalism, Culture and Community, Bournemouth University, Bournemouth, p 70
- Bennett CJ (2014) Voter surveillance, micro-targeting and democratic politics: knowing how people vote before they do. Presented at 2014 Surveillance Studies Network Conference, Barcelona. <http://ssrn.com/abstract=2605183>. Accessed 12 Aug 2015
- Burnham A (2015, July 7) Facebook page video. <https://www.facebook.com/andy4leader/videos/844379595657088/>. Accessed 16 Aug 2015
- Chadwick A (2017) Corbyn, Labour, digital media, and the 2017 UK election. In: Thorsen, E, Jackson, D, Lilleker, D (eds) UK General election analysis 2017: media, voters and the campaign. Centre for the Study of Journalism, Culture and Community, Bournemouth University, Bournemouth, p 89
- Charlwood A (2015, May 26). We need to talk about Labour’s ground campaign. Progress. <http://www.progressonline.org.uk/2015/05/26/we-need-to-talk-about-labours-ground-campaign/>. Accessed 9 July 2015
- Collins R (2014) Building a one nation Labour Party. The Collins review into Labour Party reform. The Labour Party, London
- Cooper, A (2015, April 27) All quiet on the election front: silent campaign passes most voters by. The Guardian. <http://www.theguardian.com/politics/2015/apr/27/all-quiet-on-the-election-front-silent-campaign-passes-most-voters-by>. Accessed 16 May 2015

- Costa, D (2012, November 10) Voter ID and community politics – Labour needs both. Labour List. <http://labourlist.org/2012/07/voter-id-and-community-politics-labour-needs-both/>. Accessed 12 Aug 2015
- Denver D, Hands G (2002) Post-Fordism in the constituencies? The continuing development of constituency campaigning in Britain. In: Farrell D, Schmitt-Beck R (eds) *Do political campaigns matter?* Routledge, London, pp 108–126
- Durrani, A (2015, April 27) Labour Party winning social media election battle. MediaWeek. <http://www.mediaweek.co.uk/article/1344640/labour-party-winning-social-media-election-battle>. Accessed 16 May 2015
- Ferguson M (2013, January 8) 5 key things to take away from Labour's target seat list (and election strategy). LabourList. <http://labourlist.org/2013/01/5-key-things-to-take-away-from-labours-target-seat-list-and-election-strategy/>. Accessed 9 July 2015
- Gauja A (2013) *The politics of party policy: from members to legislators*. Palgrave Macmillan, Basingstoke
- Gibson, R (2015, July 7). Are we there yet? Big data and the 2015 election campaign. Presented at Britain's first big data election? The nature and implications of big data politics, PSA and royal statistical society conference. <http://www.statslife.org.uk/features/2402-event-report-britain-s-first-big-data-election>. Accessed 16 Aug 2015
- Harman, I (2015, May 6) Last ditch attempts to win votes are pointless without months of legwork. The Spectator. <http://blogs.spectator.co.uk/coffeeshop/2015/05/last-ditch-attempts-to-win-votes-are-pointless-without-months-of-legwork/>. Accessed 9 July 2015
- Hood C, Margetts H (2010) *Paradoxes of modernization: unintended consequences of public policy reform*. Oxford University Press, Oxford
- Issenberg S (2012) *The victory lab: the secret science of winning campaigns*. Broadway Books, New York
- Katz RS, Mair P (1995) Changing models of party organization and party democracy. The emergence of the cartel party. *Party Politics* 1(1):5–28
- Keen, R (2014, September 21) Membership of UK political parties. House of Commons Library, London
- Labour Party (2012) *Real change to win. Community organizing: a Labour Party guide*. The Labour Party, London
- Lilleker DG (2015) The battle for the online audience: 2015 as the social media election? In: Jackson D, Thorsen E (eds) *UK election analysis 2015: media, voters and the campaign*. Centre for the Study of Journalism, Culture and Community, Bournemouth University, Bournemouth, pp 70–71. <http://www.electionanalysis.uk/>. Accessed 16 Aug 2015
- Lilleker DG, Jackson N (2011) Chapter 8: The UK 2010: interacting within echo chambers in political campaigning. In: Lilleker DG, Jackson N (eds) *Elections and the internet: comparing the US, UK, France and Germany*. Routledge, London, pp 121–142
- Margetts H (2006) Chapter 46: Cyber parties. In: Katz RS, Crotty W (eds) *Handbook of party politics*. Sage, London, pp 528–535
- McNicol I (2013, September 21). Labour's faith in community organizing will lead it to victory. The New Statesman. <http://www.newstatesman.com/politics/2013/09/labours-faith-community-organising-will-lead-it-victory>. Accessed 16 Aug 2015
- Minkin L (2014) *The Blair supremacy. A study in the politics of Labour's Party Management*. Manchester University Press, Manchester
- NESTA (2014, June 23) Big data and the 2015 UK general election: digital democracy or digitally divisive? <http://www.nesta.org.uk/blog/big-data-and-2015-uk-general-election-digital-democracy-or-digitally-divisive#sthash>. Accessed 9 July 2015
- Nickerson DW, Rogers T (2014, Spring) Political campaigns and big data. *Journal of Economic Perspectives* 28(2):51–74
- Nielsen RK (2014) *Ground wars: personalized communication in political campaigns*. Princeton University Press, Princeton

- Norris P (2000) A virtuous circle? The impact of political communications in post-industrial democracies. Cambridge University Press, Cambridge
- Pack M (2011, September 30) Liberal Democrat CONNECT. Blog. <http://www.markpack.org.uk/24133/liberal-democrat-connect/>. Accessed 12 Aug 2015
- Pedersen K, Saglie J (2005) New technology in ageing parties: internet use in Danish and Norwegian parties. *Party Politics* 11:359–377
- Pinheiro FA (2009) Politically oriented database applications. In: Ferragine V, Doorn J, Rivero L (eds) *Handbook of research on innovations in database technologies and applications: current and future trends*. Information Science Reference, Hershey, pp 214–220
- Ridge-Newman A (2014) Cameron's conservatives and the internet. Change, culture and cyber toryism. Palgrave Macmillan, Basingstoke
- Savage M, Hacillo A (2017, June 10) How Jeremy Corbyn turned a youth surge into general election votes. *The Guardian*. <https://www.theguardian.com/politics/2017/jun/10/jeremy-corbyn-youth-surge-votes-digital-activists>. Accessed 27 Oct 2017
- Scarow SE (2015) Beyond party members. Changing approaches to partisan mobilization. Oxford University Press, Oxford
- Segesten AD, Bossetta M (2017) Sharing is caring: labour supporters use of social media #GE2017. In: Thorsen E, Jackson D, Lilleker D (eds) *UK General election analysis 2017: media, voters and the campaign*. Centre for the Study of Journalism, Culture and Community, Bournemouth University, Bournemouth, p 91
- Smith C (1998) Political parties in the information age: from 'mass party' to leadership organizations. In: Snellen I, Van De Donk W (eds) *Public administration in an information age, a handbook*. IOS Press, Amsterdam, pp 175–189
- Smith C (2000) British political parties: continuity and change in an information age. In: Hoff J, Horrocks I, Tops P (eds) *Democratic governance and new technology*. Routledge, London, pp 71–86
- Sunstein C (2001) *Republic.com*. Princeton University Press, Princeton
- Wallace M (2015, June 16) The computers that crashed. And the campaign that didn't. The story of the Tory stealth operation that outwitted Labour last month. Conservativehome. <http://www.conservativehome.com/thetorydiary/2015/06/the-computers-that-crashed-and-the-campaign-that-didnt-the-story-of-the-tory-stealth-operation-that-outwitted-labour.html>. Accessed 16 Aug 2015
- Wallace M (2017, September 6) Our CCHQ election audit: the rusty machine, part two. How and why the ground campaign failed. Conservativehome. https://www.conservativehome.com/majority_conservatism/2017/09/our-cchq-election-audit-the-rusty-machine-part-two-how-and-why-the-ground-campaign-failed.html. Accessed 27 Oct 2017
- Warren I (2015, August 5) Decommissioning machine politics is hard. Labour must adapt or be evolved out of existence. LabourList. <http://elxn-data.blogspot.fr/2015/08/a-response-to-arnie-graf.html>. Accessed 21 Aug 2015
- Watson T (2015a) Deputy leadership campaign page. <http://www.labour.org.uk/index.php/leadership/candidate/tom-watson>. Accessed 16 Aug 2015
- Watson T (2015b, June 19) Building a modern Labour Party. Speech in Dagenham. <http://www.tom-watson.com/speech>. Accessed 12 Aug 2015
- Wintour, P (2010, February 19) Yes we can: Labour election campaign to adapt Barack Obama's blueprint. *The Guardian*. <http://www.theguardian.com/politics/2010/feb/19/yes-we-can-labour-obama-election>. Accessed 12 Aug 2015
- Wring D (2004) *The politics of marketing the Labour Party*. Palgrave Macmillan, Basingstoke



Smart Contracts as Evidence: Trust, Records, and the Future of Decentralized Transactions

35

Kristin B. Cornelius

Contents

Introduction	629
A Call for Research: Possible Theories and Questions	633
Contract Governance and Distinctions	633
Recordkeeping Principles and Statutes	635
Theories of Evidence	637
Preliminary Results	639
Statutes and Regulation Case Study	639
IRS Case Study	641
Conclusion	642
References	644

Abstract

Smart contracts are computer programs that self-execute the simple instructions necessary to carry out a transaction. Currently, this technology is most often used to manipulate cryptocurrencies such as Bitcoin or Ethereum that are implemented by means of a public blockchain. Supporters believe ideally this automation has the potential to remove the need for third-party oversight entirely such as that currently provided by financial, legal, regulatory, professional practice, and enforcement. Yet, conflating all of these institutions and their roles as a singular target of disruption is a mistake as the motivations and mechanisms of each type of institution varies. This project proposes a call for research on blockchain technology, and smart contracts in particular, as they relate to two types of oversight practices. The first study considers how legal discourse provides (or fails to provide) the proper oversight for digitized contracts and how smart contracts, rather than replace it, might only serve to exacerbate some of its

K. B. Cornelius (✉)

Information Studies, University of California, Los Angeles, USA
e-mail: krisbcorn@ucla.edu

failures. The second study looks at the investigation and prosecution of criminal activity and the creation of standards and regulations by corresponding institutions that force companies to produce records that stand as evidence in these investigations. The analysis draws on previous interpretations of digitized contracts and a series of interviews with two IRS Special Agents who investigate blockchain or related crime.

Keywords

Smart Contracts · Blockchain · Evidence · Records

On a Tuesday afternoon in September, I met with two Internal Revenue Service (IRS) agents in a Chinese café in the middle of the San Fernando Valley. We sat off to the side of the restaurant, away from other patrons to keep our conversation private. Our meeting lasted for approximately 3 h, and throughout, one of the agents (the one actively on duty) had to leave for a couple of long stretches to field some phone calls – to “put out fires.” The agent was coordinating with FBI agents and US Attorneys who were prosecuting a case that used hundreds of millions worth of US dollars in cryptocurrency in its illegal operation. Although my discussion with these agents was about how smart contracts could be used in criminal activity, this case was relevant because smart contracts currently primarily manipulate cryptocurrencies. While the most popular cryptocurrency Bitcoin initially had a reputation for being used in dark net operations, which has since been mostly repaired, smart contracts from the outset seem to be integrated into more “above-board” business and industry systems. It is possible its nefarious uses might be more difficult to predict and may involve much more complex, white-collar crimes from individuals who are more willing to learn the sophisticated technology. The IRS agent confirmed my suspicion, noting that smart contracts have a steeper learning curve and are not as appealing to some of the types of criminals that have used cryptocurrencies in the past (Special Agent A). However, this new technology, once mastered, has the potential theoretically to automate illegal activities more easily or on a mass scale (De Filippi and Wright 2018). Shell companies, tax evasion, and money laundering could be done with automated, behind-the-scenes technology that allows two parties who may not otherwise trust each other to more easily become bad actors and to work securely and anonymously. Regardless of the type of crime or level of sophistication of the activities, one agent told me they are looking for people who move significant amounts of money. As if in response to this comment, 2 months later I came across a piece of news about the IRS’s successful request of the most popular Bitcoin wallet service, Coinbase, to deliver the names of 14,355 of its nearly six million customers (customers who trade more than \$20,000 in a single year). Coinbase was expectedly upset at the request and fought it for over a year, dramatically reducing the number of customers whose data they needed to turn over. Their statement: “Although we are disappointed not to be able to entirely defeat the summons [...] we are proud to fight for our customers and in the result we were able to achieve as a small company against a large government agency” (Farmer 2017).

This David-and-Goliath response reflects the larger cryptocurrency community's aversion to oversight systems, especially government, whose function they claim can be replaced by this new technology. This chapter is a call for research that looks critically at the relationship between oversight institutions specifically, such as the IRS, and the ability of smart contracts to replicate their functionality. Since many supporters of cryptocurrencies believe third parties' potential to be corrupted warrants a radical political change, the role of these institutions and their role in regulating new technologies like smart contracts needs to be explored. Moreover, this call is timely as the oversight and enforcement agencies that regulate criminal activity in the US are under scrutiny by the current administration and are being questioned ideologically as a result of this tumultuous political climate (see Lichtblau 2018 as one example).

Introduction

Concepts such as transparency, accountability, algorithmic critique, and e-governance are invoked regularly in academic and other discourses addressing the ongoing negotiation between technologies that provide convenience and efficiency for consumers or industry and the ways in which such influential technologies mask their politics and inner workings. Smart contracts are computer programs that self-execute the instructions necessary to carry out a transaction. Although new, this technology is already prompting critical study with some scholars questioning their legality or comparing them to previous forms of contracts, leading to indefinite conclusions and calling for further research (Levy 2017; Werbach and Cornell 2017; Raskin 2017; De Filippi and Wright 2018). Currently, smart contracts are most often used to manipulate public cryptocurrency and blockchain systems, such as Bitcoin or Ethereum, but they can be used in private or "permissioned" blockchain systems as well. A blockchain is a secure, distributed ledger comprised of a chain of record-type entities (called transactions). Transactions stored on a blockchain are held to be incorruptible because they are cryptographically chained together and publicly replicated across each node of a decentralized computer network. Blockchain technology uses the transparency of multiple public copies of the ledger to ensure the accountability and accuracy of the transactions. Since transactions are publicly copied onto each node of the peer-to-peer network, there is no centralized point of attack (Mills et al. 2016). To fraudulently change records on the distributed ledger, an attacker must control the majority of nodes in the network, a computationally expensive and improbable event.

Smart contracts have potential international impact on the interests and activities of governments, corporate and legal actors, and citizens. Over the past year, Ethereum, currently most popular instantiation of smart contracts, processed millions of transactions and was at the center of discussions for the global financial industry. 2017 was deemed the "year of the smart contract" at the Slush technology conference in January (Gilson 2017), where proponents gathered to discuss future implementations and implications of this new technology. Hailed as having the

potential to revolutionize the future (Cassano 2014) and produce a decentralized, networked environment similar to the ideal “information society” proposed by Manuel Castells (1996, 2007), the idea of smart contracts suggests on its surface that technology can *enforce* the same rules for everyone, rather than just facilitate a platform for equality (Szabo 1996). However, the politics underlying this technology from its original camp of avid supporters is much more in line with an individualistic, libertarian philosophy than Castells, and its full range of uses has yet to be realized (Sills 2018).

Smart contracts represent the synthesis of two lines of technological development – electronic contracting and secure distributed computing – and yet this fusion is complicated: “Viewed in one way, smart contracts represent merely the latest step in the evolution of electronic agreements [but] from another perspective, smart contracts’ use of blockchain technology distinguishes them from any antecedents” (Werbach and Cornell 2017). Those who champion blockchain technology (and distributed ledgers more generally) promote it as revolutionary, some even calling it “the most consequential technology since the internet” (Varadarajan 2017). The hype during 2017, at least, seems right on target with this rhetoric. Towards its end, for instance, Ethereum, had an estimated market capitalization of US \$28 billion (Olszewicz 2017). By mid-October 2017, the Ethereum network had processed over 4.3 million blocks of transactions, with hundreds of thousands being continually processed each day (“Etherscan”). Following Ethereum’s successful public implementation, it has been adopted and further developed by Microsoft, Intel, and more than two dozen major banks for private or “permissioned” use (Foley 2017). At the time of writing, Ethereum is at the center of discussions for several national and international government institutions and the global financial industry.

Supporters believe that, at a minimum, smart contracts promise automated transactions with reduced costs and greater efficiency (Frisby 2016). Ideally, supporters argue this automation has the potential to remove entirely the need for third-party oversight such as that currently provided by financial, legal, and regulatory enforcement institutions, which they feel are prone to corruption (Szabo 1996). Scholars have rightly been critical, noting the inability of smart contracts to completely replace the role of third parties entirely or the functionality of contracts more generally (Levy 2017; De Filippi and Wright 2018). I argue further that conflating all third-party institutions and their individual roles as a singular target of disruption is a mistake. It is shortsighted to assume that blockchain will be the total answer for such disruption and will be the only smart contract technology in coming years. Moreover, the motivations vary for each type of third-party institution, even those within the regulatory sphere, promote disruption, or perhaps less radically, improvement, integration, and regulation, and may need to happen on more than one front and with more than one mechanism. Banks, for instance, generally prioritize value, profit, and efficiency in addition to security, while other enforcement agencies such as the Securities and Exchange Commission (SEC) and the Internal Revenue Service (IRS), promote accountability and enforce transparency. Banks are also be interested in compliance and simplifying monetary services for legal banking activity, whereas the SEC and IRS are engaged in administering recordkeeping codes, which aid in

collecting evidence to assemble narratives that rein in large, complex white collar criminal activity. This chapter's call for research pushes against the specific community of blockchain technology supporters that aims to overturn centralized governance provided by third-party oversight with "immutable, unstoppable, and irrefutable computer code" that instantiates the "tamper-proof" records (Wall 2016), which allows smart contracts the ability to "self-enforce" (Szabo 1996). I suggest that the differentiation between the aspects of governance (including contract law), evidence procedures and processes, and recordkeeping practices as way to determine what can and cannot be replicated by smart contract technology is a worthwhile task that can prevent widespread misuse of this new technology. As early scholarship focused philosophically on the nature of contracts and its relationship to smart contract technology, this chapter calls for a similar look into the nuanced and layered work of these institutions and how smart contracts might interact with these processes.

One issue at hand in the problems presented by attempts to replace third-party oversight institutions could include the delicate balance between strong enough oversight to prevent misuse and government overreach. This negotiation is happening in multiple spheres as technology has augmented a wide range of activities. The Fourth Amendment and the third-party doctrine, for example, are being discussed with questions of appropriate government data collection for criminal cases (Kerr 2017). The third-party doctrine is a commonly cited legal theory that suggests patrons of a service should expect to sacrifice some of their information to an intermediary, like a third-party, in order to for them to make a judgment or provide a service (Kerr 2009). User opinions about third-party collection practices are relevant to this conversation, and notions of the effectiveness of "disclosure" (Ben-Shahar and Schneider 2014) and limits of "consent" are currently being debated (see the Cambridge Analytica case, for instance). Practically, there are questions about what can be considered evidence, and what are the limits of government access to prosecute criminal cases (who do so by legally requesting "record dumps" from companies that collect information under this doctrine) (Kerr 2017). Understandably, calls for transparency of the corporate uses of our data (from selling it to other companies to handing it over to the government) are present in much critical discourse (Pasquale 2015). Scholars worry about the "black box society," characterized by the use of unknown algorithms to exacerbate an already unfair power balance between corporations who possess knowledge about a wide swath of consumer information and activities and private individuals. Occasionally, corporations that are complicit in this collection turn it over to government entities involuntarily and make efforts to resist in the process, which then labels them ironically as heroes of consumer rights against government overreach. (see Apple vs. FBI case (2016), or Reddit's use of "canaries" in its Terms of Service agreements to alert customers to government data collection efforts)

The other side of this coin is that transparency and accountability are needed to prevent corporate abuses, from advertising algorithms that manipulate consumers psychologically (Tufecki 2015) to fraudulent activities that maintain the wealth of the highest echelons of society (e.g., tax havens, shell companies). Government

oversight and regulation are traditionally the way that these abuses have been prevented or prosecuted. Take for instance the US statutes created to force companies to keep their records in such a way as to be able to be used in cases of criminal prosecution, including the Foreign Corrupt Practices Act (FCPA) of 1977, the Sarbanes–Oxley Act (SOX) of 2002. Ultimately government oversight is a negotiation of freedoms – the freedom of companies, of individuals, and of governments to each have the power and ability to use these new technologies for their benefit and at the same time to prevent this power from benefiting any one group too excessively.

The potential for abuse in this sphere is where the initial supporters of blockchain, cryptocurrencies, and smart contracts find their cause. The ability for smart contracts to fulfill the potential of the concept of “freedom of contract,” or the ability for two parties to decide the terms and the nature of a transaction among themselves without intervention from an outside party, aligns with libertarian ideology that services individual interests over the community’s (Sills 2018). The voice chosen in this chapter to represent this community in this chapter is Nick Szabo’s – one of the few, initial cypherpunks from the 1990s whose early writing shaped the concepts that preceded Bitcoin and smart contract implementations. Szabo’s work represents some of the foundational thoughts that prompted the development of smart contract technology. The ideas underlying smart contracts, such as cryptography, peer-to-peer infrastructure, and automated or digitized contracts have been around for decades, each with their own distinct lineages and implementations. The history of each of these topics should be considered in turn, but the main thrust of this chapter is a focus on the ideology of current and future implementations of smart contracts as it relates to concepts and practices of contracts, records, and evidence.

Within that purview, I propose three future questions for internet researchers: (1) To what extent are the theories and practices currently used to determine and regulate contracts, records, and evidence applicable to smart contract technology and to what extent are they not? (2) What types of oversight remain necessary and what additional regulations might need to be put in place to accommodate the functionalities of new technologies? (3) Could recordkeeping standards, theories of contracts and evidence, and information systems design provide guidelines that assist in ensuring that smart contracts are not misused? Specifically, I suggest uncovering how the role of agencies that investigate and prosecute criminal activity, such as the Internal Revenue Service (IRS) and the Securities and Exchange Commission (SEC), and agencies that regulate litigation procedures (such as evidence descriptions from Rules of Civil and Criminal procedures) could provide a vital assessment to the ways this technology can be misused and should be regulated.

Preliminary conclusions suggest that some smart contracts may benefit from being more explicitly categorized, either as *strong* and *weak* contracts (Raskin 2017), or as *dispositive records* and *probative records*. The spectrum of smart contracts might be distinguished by their type of enforcement, for instance, which can range from nontraditional or completely automated (i.e., strong) to traditional that still requires some type of human judgment of third-party oversight (i.e., weak). Dispositive records, on the other hand, comprise one of six types of records identified by contemporary archival diplomatics (Gilliland-Swetland 2000; Duranti

and Franks 2015), and are “records whose written form is required by the judicial system as the *essence* and *substance* of an action,” as opposed to probative records that exist as evidence after the fact and do not contain the substance of, or enact a transaction (Duranti 2009). These distinctions take on a particular relevance when applied to smart contracts as they address both their functional and performative nature and the necessary requirements for ensuring that they remain trustworthy records with an effective and communicative display throughout their lifecycle. Moreover, viewing the execution of a smart contract as an *act* allows for its implications to be seen more explicitly, resolving some of the previous issues with digitized, standard form contracts that view them as benign, routine processes without the need for additional communication or documentation.

A Call for Research: Possible Theories and Questions

This section will provide literature from three different perspectives of contract governance that are each necessary to illustrating the greater picture of how smart contracts may be regulated as contracts, as records, and as evidence and that may be useful to future research. The fields of legal contract theories and governance provide a picture of the reasoning that informs and regulates the use of business-to-business and business-to-consumer contracts. This discourse is especially important in differentiating the types of previous contracts that smart contracts could possibly replace and looking forward to how future implementations might be documented. Additionally, looking at statutes that regulate recordkeeping practices and keep corporations accountable is important in considering what types of records smart contracts might instantiate. Lastly, theories of evidence are vital to analyzing how these types of contracts will exist within processes of litigation and contract law, which ultimately are the processes that prevent widespread misuse of this technology. Altogether, this literature review provides a survey of a few different lenses under which smart contracts could be studied, which is then followed by a preliminary analysis that makes use of these theories.

Contract Governance and Distinctions

A smart contract’s relationship to its legality is dependent on its type and thus would benefit from a more clear understanding of its genre or functionality. So far, smart contracts have been primarily used for simple transactions and verification purposes (e.g., basic financial wallets, notarization, lotteries and games), but a wide variety of functions, including futures, securities, Internet of Things service contracts, supply chain contracts, and mortgage and property transfer are already in development (Bartoletti and Pompianu 2017). Recent scholarship has begun to parse out these different types of contracts, with a few recent articles noting the budding spectrum that is emerging from this technology. Clack et al.’s (2016) research from the fields of computer scholarship and the financial sector separates smart contracts by their

enforcement mechanism, from traditional means of enforcement to nontraditional, for instance. Traditionally enforced smart contracts require some kind of oversight or judgment from a third-party such as government or judicial oversight, whereas nontraditional enforcement is purely computational. Legal scholar Raskin (2017) has termed these two types of smart contracts *weak* (traditional enforcement) and *strong* (nontraditional enforcement). Raskin notes two abilities that a piece of technology that instantiates a contract (what he terms “contractware”) would need in order to replace a judge’s interpretation (and be deemed strong): (1) it must have the ability to “render correct outputs from given factual inputs”; and (2) its output needs to be reified some way in the real world.” A vending machine provides an exemplary example of a strong smart contract. In his early work, Szabo makes an analogy between a smart contract and a simple vending machine (Szabo 1996). The “contract” or agreement in this situation is simple: the vending machine gives a customer a coke for 10 cents. Instead of writing out a formal contract that says, “A coke will be exchanged for 10 cents,” the machine was built to execute the contract’s terms mechanically so that inserting a dime triggers a coke release mechanism. There is no need to go to the trouble of writing out such a simple transaction that will repeat many times over with unchanged terms. Smart contracts, he says, have similar uses: to execute the terms of simple transactions with technical code, or “dry code” as he calls it, or code that is interpreted by a computer. This is opposed to “wet code” that is the subjective language of legal contracts needing the mind of a human for all aspects of interpretation, including mediation and negotiation. Szabo notes the need for a mix of the two types of code for smart contracts – he supposes that a large part of the transactions that occur in the world rely on simple, repeatable terms, which can easily be codified, saving costs and vastly improving efficiency. Therefore, dry code can be used to automate the majority of these transactions. It might be said that weak smart contracts contain some of the “wet code” that Szabo mentions, which requires subjective judgment.

Smart contracts in some sense are merely an extension of the electronic data interchange (EDI) formats (Szabo (1996) cites the field of Electronic Data Interchange (EDI), in which “elements of traditional business transactions (invoices, receipts, etc.) are exchanged electronically,” as one of the “primitive forerunners” to smart contract technology.) used in many electronic exchanges of data (Szabo 1996; Werbach and Cornell 2017). With EDI transactions, which now underlie many types transactions from supply chain management to the replacement of many types of previous contracts, parties tended to rely on “master agreements” rather than solely “code-based arrangements” as these contextualized the exchange “within the context of a broader contractual relationship” (Wittie and Winn 2001; De Filippi and Wright 2018). In other words, the code itself is simply not sufficient enough to encompass the entire contractual agreement. While smart contracts may memorialize contract terms in a way that is difficult to change once executed, this is far from the only characteristic needed to provide the full functionality of previous types of contracts, even those that are “standard form” or comprised of “dry code.” External information (like EDI’s “master agreements”) or proof of the parties’ intent at the time of signing might be needed, for instance, as contracts are not simply static

records and may need changes over time (Levy 2017). Actually, subsequent renegotiation is often a beneficial and necessary feature of contracts that some say smart contracts overlook (Levy 2017). Further, the “bond” of smart contracts to other related records may need to be stated in order for their status as authoritative records to be authentic and reliable (Lemieux and Sporny 2017). Locating these distinctions and features might be a step toward understanding the types of contracts that smart contracts might embody, although it is still early in the development of this technology and more work needs to be done in this regard. Most importantly, these contracts need to be organized and documented appropriately so as to facilitate their ability to perform *as* a certain type of document (e.g., a contract, a record) which ultimately aids in their ability to be used as evidence in a remedial or litigation situation or to be able to self-enforce.

Recordkeeping Principles and Statutes

Since smart contracts are currently implemented most prevalently with blockchain technology, they undeniably produce records as part of that implementation, and studying the application of blockchain technology as a recordkeeping tool has already begun. The work currently being conducted at the global research initiative InterPARES Trust, for instance, considers both the aspects of recordkeeping that the technology solves and also where it falls short. Lemieux (2016a) provides an examination of the trustworthiness (i.e., authenticity and reliability) of the records it creates and a framework within which it should be assessed from an archival perspective. Her work is also informed by that of her colleague Luciana Duranti, a scholar in the areas of archival theory and records management. Duranti has been a leading advocate for the adaptation of the centuries-old document authentication techniques of *diplomatic science* to address the need to ensure the creation of reliable and preservation of authentic born-digital records as well as for application when such records are disputed. As a methodology for contemporary archival theory, diplomatics supports thinking critically about the “processes of records creation, transmission, maintenance and use, and [...] ensuring and attesting to [records’] authenticity over time” (Duranti 2015). Duranti believes that diplomatics can be used as a top-down theory both retrospectively and prospectively, not only to comprehend what exists in current records systems, but also to determine what *should* exist “to ensure reliability, accuracy and authenticity of records as well as the reliability of record-making and recordkeeping systems.” However a top-down retrospective method can only look for phenomena that, based on past experience, are known or might be expected. It cannot show if something truly new is occurring. To do that requires a bottom-up method such as that proposed in this study. Early analysis from this work has concluded that blockchain records, including smart contracts, do not live up to concepts of reliability (in the diplomatic sense) as they do not always have a “controlled process of creation” and can theoretically be created by anyone. What is at stake in their discourse is not just a supposed increase in trust, but a claim to *remove* the need for it, which is why it is sometimes referred to

as a “trustless” system (Lemieux 2016b). In agreement with this assessment, others (Spode 2017) have noted how:

Blockchains don’t offer us a trustless system, but rather a *reassignment* of trust. Instead of trusting our laws and institutions, we are being asked to trust stakeholders and miners, and programmers, and those who know enough coding to be able to verify the code. We aren’t actually trusting the blockchain technology; we are trusting the people that *support* the blockchain.

Diplomatics categorizes documents into categories based on the purpose served by their written form (Duranti 1994), the most important of which being *dispositive records* and *probative* records. Duranti argues that for dispositive records, “the purpose of a written form [is] to put into existence an act, the effects of which [are] determined by the writing itself (that is, the written form was the essence and substance of the act).” Examples of dispositive records are contracts and wills. For probative records, “the purpose of the written form is to produce evidence of an act which [comes] into existence and [is] complete before being manifested in writing.” Examples of probative records include certificates and receipts. Duranti (1994) notes that digital conceptions might potentially “blend the fundamental difference between the two categories,” specifically their differences in timing. She states:

...whereas in a probative document the moment of action precedes the moment of its documentation (for example, a birth takes place and produces effects before its entry into the birth register), in a dispositive document, the two moments are simultaneous and indistinguishable other than conceptually (for example, a sale takes place when and only when a contract of sale is completed), to the point that, in positive law, dispositive documents are usually called ‘acts.’

This documentary agency should be applied to smart contracts in all of their forms so as to not allow them to operate behind the scenes in a digital space without consumer awareness and so they do not aid in large-scale corporate crime. Most importantly, some of these recordkeeping practices should be codified in order for corporations to be kept accountable.

US laws that might affect smart contracts include recordkeeping determinations of the Foreign Corrupt Practices Act of 1977 (FCPA) and the Sarbanes-Oxley Act of 2002 (SOX), and the Uniform Electronic Transaction Act (UETA) of 2000. Created after a string of several major corporate scandals, notably those relating to Enron and WorldCom, SOX was the most comprehensive accounting reform enforcement since the FCPA from the late 1970s (Deming 2006). Both the FCPA and SOX sought to set accounting and bookkeeping requirements for companies, with the former focused on transparency in dealing with foreign officials and the latter focusing on the alteration and destruction of records. Both acts endorse the need for corporate responsibility through accountability, using recordkeeping requirements to rein in corporate crime and fraudulent activity. Specifically, the FCPA requires companies to “(a) make and keep books and records that accurately and fairly reflect the transactions of the corporation and (b) devise and maintain an adequate system of

internal accounting controls” (Deming 2006). SOX expanded on these basic requests, asking, among other provisions, for explicit corporate responsibility of accurate records (Title III, Section 302) and not just external auditing assessments, and for specific actions regarding the destruction of or tampering with records implicated in “official proceedings” (Title VIII also called the “Corporate Fraud Accountability Act of 2002”).

The UETA laws of the early 2000s were enacted by the Clinton administration and were intended to streamline increasing online commerce activity across multiple jurisdictions (Wittie and Winn 2001). They lowered the standard for recordkeeping and documentation requirements for digital transactions, including removing the need to retain paper copies of each transaction and loosening the types of actions that would signal agreement amongst parties. Terms of service agreements that are now found in the margins of most major web platforms and are in some cases allowed validity through “browswrap” agreement, or agreement simply by browsing a webpage, are a product of the UETA laws. The agreements have several negative implications for data collection and privacy concerns (See the recent facebook and Cambridge Analytica scandal, for instance, in which many of the allowances of data collection were due to clauses in terms of service agreements.) and are particularly egregious offenders for marginalized and low-income communities (Ventuini et al. 2016).

New EU policies, including the General Data Protection Regulation (GDPR) that was enacted in May of 2018 specifies, among other principles, an accountability mechanism referred to as “the right to know.” This includes corporate responsibility to inform consumers about the workings of algorithmic code that could affect them when using a service (Wachter et al. 2017). Clarity of information to the public and especially to minors is one of the major principles of GDPR and requires a transparency of the contracts that govern the way information is handled on third-party services. Like SOX and other recordkeeping statutes, parsing out the different types of smart contracts and documenting them as such works toward this goal in order to prevent these algorithmic transactions from becoming automated, behind-the-scenes contracts of which consumers are unaware.

Theories of Evidence

The history and uses of evidence, including its many concepts and practices, suggest that understandings of what comprises evidence are dependent upon the paradigm within which evidence will be acquired, assessed, and introduced. Associated with logic and the scientific method, evidence in general is used to provide support to an argument; yet, in many respects, this practice could benefit from a reconsideration of the underlying epistemological assumptions that lead to its use as a testament to truth (Furner 2004). Disciplinary expectations of evidence differ, for instance. Historians and archivists might be suspicious of evidence that claims to present self-evident facts or logical explanations, while in a legal context, the presentation of facts is sometimes contingent upon rules of admissibility or *circumstantial* evidence that can

prove facts indirectly. Records have long been associated with the legal concept of evidence, although evidence can take many other forms and instantiations (Furner 2004; Yeo 2007). This project will mainly consider legal conceptions of evidence, but from a more holistic, philosophical perspective such as in the research of legal scholar John Henry Wigmore (1863–1943), as well as in more practical doctrines such as the Federal Rules of Evidence, which specify which types of evidence are admissible in US federal courts.

Wigmore wrote about evidence and proof, producing influential textbooks on the topic in the early-to-mid twentieth century. His work emphasized the holistic and contextual nature of individual items of evidence, arguing “facts are evidence insofar as they play a role in a teleologically directed argument” (Anderson and Twining 1991). Wigmore viewed evidentiary analysis as an interaction between law and facts through “a process of decomposition,” and found that the process of using evidence to prove a case required viewing it as three distinct layers of information: (1) as a proposition (hypothesis); (2) as specific elements of law that need to be satisfied; and (3) as material evidence and facts that make up the narrative of the case. Viewing evidence in this way resolved what Wigmore referred to as the “worn out legal system” of the nineteenth century that relied heavily on numerical systems and had “no understanding of the living process of belief.” Ultimately, Wigmore’s method puts into words the reasons why a total mass of evidence does or should persuade. This method asks the question – “can we work out a mental probative equation?” – in a similar fashion to working out a mathematical equation. He believed there could be a method for solving a “complex mass of evidence in contentious litigation” as, from his research, the number of mental processes in dealing with evidence is strictly limited.

Wigmore thus distinguished the study of the principles of evidence into two categories. The first process is the aforementioned analysis that details the informal logic of reasoning and argumentation; Wigmore calls this the study of Proof (in the general sense) and it consists of the practice concerned with “the ratiocinative process of continuous persuasion.” The principles considered in this study include the “probative force” of a piece of evidence, which describes its tendency to support or to negate the first piece of information, the proposition or hypothesis. He describes two outcomes for a piece of evidence once it is interpreted in a trial: Proof or non-Proof. He calls this analysis a “probative science” and states it “must be [...] independent of the artificial rules of procedure.” These “rules of procedure” make up the second category of study, which Wigmore calls Admissibility. They consist of the procedural rules developed by the law and based on “litigious experience and tradition, to guard the [jury] against erroneous persuasion.” Admissibility has come to be represented in documents such as the Federal Rules of Evidence, which govern the process of evidence discretion in trial court (Title 3: Civil Rules 2007). While these rules safeguard procedures that produce trustworthy evidence, many of the distinctions that Wigmore makes in regard to the study of principles of Proof, including argumentation, inference, and probative value, are not separated, but rather superficially codified into these procedure doctrines. This project reinstates this early distinction by Wigmore, which I believe, similar to others (Anderson and Twining 1991), provides a rigorous method of rational inquiry that would benefit a study of fact and law in current evidentiary paradigms in which it is overlooked.

One area of evidence studies that is undertheorized and would benefit from the distinctions made by Wigmore's research is the information retrieval (IR) process of e-Discovery practices. Rules of civil procedure and admissibility for evidence in civil trials begins with two parties requesting "materially relevant" documents from each other in order to build their case, often making use of digital technologies to find, sort, and organize the material (Oard 2013). Since the parties are adversarial, the process involves specific guidelines regarding conceptions of "materiality" so that each party knows what documents they must provide the other. In the US and UK, a basic materiality standard is followed, which is that parties must provide any documents that are relevant to one or more facts at issue. These rules and definitions vary from country to country, however, even province to province or state to state. From the perspective of IR, differences between materiality standards and relevance standards is that the latter emphasizes recall, or the proportion of relevant documents that are retrieved, whereas the former arguably emphasizes precision, or the proportion of the retrieved documents that are relevant. Thus, more liberal materiality standards invite a larger document retrieval response, which can put the receiving party at a disadvantage from a "record dump" of too many irrelevant documents to sift through (or too broad a range of documents allowing for a sweep of data collection as in the Fourth Amendment or third-party doctrine cases). More stringent materiality standards such as the relevance standard offer an opposite problem in that it may be difficult to determine the accuracy of the precision of the documents retrieved since often the landscape of the total documents is unknown. Electronic discovery processes have only touched upon IR solutions for this issue, including an early study done by computer scientists at the San Diego Supercomputer Center that, at the end of the 1990s, experimented with IR and XML document-type definitions (DTDs) that separated document content from structure (Persistent Archives Technology (PAT) study cited in Furner and Gilliland 2016). This allowed the researchers to be able to possibly identify the *absence* of documents, rather than just their *presence*, potentially providing a strategy for finding a "smoking gun"-type document, which is very useful in an e-Discovery situation (Furner and Gilliland 2016). These theories of evidence and IR could be useful in helping to sort through the types of documentation different implementations of smart contracts might need.

Preliminary Results

A couple of brief summaries of case studies from my own preliminary research on the topic are helpful in depicting what future proposed analyses might look like.

Statutes and Regulation Case Study

Under the umbrella of smart contract functionality, current laws such as the UETA and SOX raise several questions such as: What constitutes "agreement"? What does it mean to "deal" with a foreign official in this anonymous, international

environment? What constitutes the boundaries of the record of a smart contract and what would it mean to tamper or alter it? Is there a way to delete the record after it is created and submitted to the blockchain? These questions are important to ask, not least because the interpretation of legal understandings of records could produce new forms of contract procedural complexity (including new forms of agreement) that has implications for consumers and a violation of the SOX act could result in a 20-year prison sentence (Section 1512).

New laws such as the Nevada Senate Bill (No. 398) have begun to define smart contracts made with blockchain technology as legitimate, binding documents that produce “an electronic record created by the use of a decentralized method by multiple parties to verify and store a digital record of transactions which is secured by the use of a cryptographic hash of previous transaction information (Lujan 2017).” This interpretation, which is based on a rendering of the UETA laws, has tended to more liberally define agreement mechanisms for this technology and its properties as a record. While the intention behind this decision could help with streamlining smart contract transactions for industry in the same way that it did for other types of transactions, the implications may be similar to how the definition of agreement changed with previous digitized contracts such as terms of service agreements. For example, according to the Nevada bill’s interpretation, commitment to the blockchain can now signal agreement: “If a law requires a signature, submission of a blockchain which electronically contains the signature or verifies the intent of a person to provide the signature satisfies the law.” Several pieces of information must be gathered to fully interpret this definition, including what is meant by “intent” by both parties, especially since in certain situations it only takes one person to execute a record on the chain; however, it already seems that smart contracts, although initially disassociated with their contract predecessors, are still being provided the same affordances and should be monitored so that the same types of inequities are not codified into this new technology for consumers.

Whether or not the FCPA and SOX laws will have overbroad interpretations of smart contracts remains yet to be seen. While smart contracts attest to being “unalterable” once committed to the blockchain, a quality that seems to render Section VIII of the SOX moot, there are still ways to delete data from an already implemented transaction. One could code in a “terminate” function, for instance, that deletes data from the contract at a later period of its execution, or even create a new contract that references a previous contract and alters or terminates it retrospectively (Lemieux 2017). While this violates recordkeeping standards such as a detailed and controlled process of retention and disposition overseen by a designated disposition authority (ISO 15849, Section 9.9), some contract coders are encouraged, even rewarded, for including instructions to delete unnecessary data as the contract executes itself in order to save space on the blockchain (“Ethereum”). If a contract is set to terminate prior to its use as evidence, would that termination be considered deleting a record implicated in a crime? If the code was edited, even with a record of those edits, would that be considered altering the record? In other words, how do coding activities relate to “the destruction or alteration of records” cited in the SOX is what is at stake in making these activities legal or otherwise, especially with a

community that might not see this oversight as necessary in the first place. Thus, “normal use” and “corrupt use” in this environment needs to be carefully distinguished and these laws need thorough analysis in order to preserve their utility.

IRS Case Study

For the Internal Revenue Service (IRS), the concept of evidence could play out in two ways: for auditing and in criminal investigations. While most IRS agents engage in the process of regular tax audits, a small group of investigators (approximately 2500 people) called Special Agents investigate criminal activity. In order to test the hypothesis that the immutability of the record could override third-party oversight (such as the IRS provides), I spoke with two of these agents who investigate blockchain technology to understand how smart contracts might be used as evidence in one of these criminal investigations. One common crime the IRS prosecutes is called structuring (see 26 U.S. Code § 5891 – Structured settlement factoring transactions), where money is broken up into smaller pieces to avoid detection, taxes, and more. Due to their ability to facilitate “trustless” transactions among untrusted parties and automate these transactions, with smart contract technology, the potential for automated, large scale structuring is possible. Moreover, with the increasingly popular semi-illegal and unregulated services called “mixers” and “tumblers” such as *ZCoin*, that take cryptocurrencies’ transactional records and change the details of the transaction under the guise of “privacy” and “anonymity,” smart contract activities have the ability to be further obscured (Faife 2017).

As IRS Special Agents build cases that they present to a US Attorney to prosecute, the role of evidence is vital to their work. When asked about contracts in general, Special Agent A explained:

A contract is *holistically* fraudulent. It is only when the contract dictates that a person take route A over route B, and they *do* take route A, that the contract becomes part of the act of fraud. And, for the IRS, it is when route A, whether a series of illegal deductions or any other fraudulent activity, is reported on a tax form that we can do anything about it. Until those two actions happen, the contract is just a piece of paper with words on it. When they do, it is evidence.

In a smart contract environment, again these notions can play out differently. Since smart contracts *will* execute once placed on the blockchain, *when* does the activity become fraudulent? Does simply placing the contract on the blockchain show a commitment to taking a certain route? Is it the same thing as taking the route? Consider that the recent Nevada bill determined that commitment to the blockchain is the same as agreement.

Regardless of the answers to these questions, it is evident that smart contracts as records of evidence are not enough by themselves. Corroborative evidence is needed to build a case against a criminal, and thus IRS agents and institutions such as the IRS are needed to stop these activities. Special Agent B provided a useful example to this point. They described the following situation: “Person A (Renter) is renting from

Person B (Landlord) and the agreement is executed by a smart contract. There is some kind of fraud that occurs and a resulting dispute.” While usually the scenarios they prosecute are much more complex than this, in this simple example, Special Agent B said they would need the following information to produce a reliable case:

1. A parallel paper contract with agreements from both parties (public records searches, subpoenas to record keeping authorities).
2. A history of payments between a and B (subpoenas to corresponding financial institutions).
3. Email, phone, other types of communication (subpoenas or search warrants).
4. Undercover, if necessary (to reveal and confirm any allegations of fraud on the part of the various parties).
5. Witness accounts from the inception of the agreement through the present (interviews).
6. Conditions on the blockchain that would reveal payment/nonpayment and their corresponding truth/falseness in real life.
7. Authentication protocols for both users and their conditions (are the transactions automated or triggered by one party or the other, and for what reason?)
8. Personal computer evidence (acquired through search warrants or consent searches).
9. Wallet managing services, along with ISPs, phone records, and other third-party record keepers would be acquired through subpoena or court order.

Contextual and human elements such as the location of the devices (e.g., phone being on-person) are vitally important to contributing to the strength of the case, especially with technologies including blockchain records that are difficult to trace. Thus, building a criminal case using smart contracts as evidence proves difficult and is not solved by the “immutable record” the blockchain technology behind it produces. In other words, although it may *seem* like a dispositive record with its execution as an act of contractual obligation, its probative value is especially important in evidentiary considerations. The assurance of the prosecution of illegal activity, then, is nowhere near close to replacing the role of these criminal investigators, at least with financial crimes. Wigmore’s method of analysis that considers the probative force of each of these pieces of evidence and their relationship to the dispositive record provides a helpful view, then, toward understanding a smart contract record that is supposed to be *strong* and replace traditional enforcement. Perhaps some of these documents could be put on the blockchain and documented appropriately so as not to need the postremedial investigative oversight. Or perhaps the narrative needed to prove the case requires human judgment and cannot be replaced by technology.

Conclusion

The new infrastructure associated with smart technology promises to democratize many aspects of the financial industry, for instance, and it is important to guide the implementation process with critical thought in order to prevent the new technology

from consolidating power and exacerbating current issues for those with less power. When the conversation shifts to the potential disruption of our institutions due to the trustworthiness of blockchain records, this trustworthiness needs to be tested and the role of the institutions explored. The reality is that smart contracts have yet to fulfill the qualities of authentic records set forth by the entirety of recordkeeping and accountability mechanisms that have been developed in a nuanced and complex manner over time and through extensive research and systems development (Lemieux 2017). This is also true of trustworthy evidence. Instead, they are more likely to revolutionize sectors of private industry and thus be absorbed obliquely into current regulatory paradigms. Legal and government institutions and the standards of recordkeeping that they mandate *force* companies interacting with them to attain a certain level of accountability, which smart contracts and blockchain technology have yet to be able to potentially enact or satisfy on their own. The rhetoric purported by this community endorses a computing “fix-all” mindset, leaving out the very important human aspects of the contract process.

Denatured contracts are but one possible issue, but require an adequate comparison between previous contracts, particularly standardized contracts as this is what Szabo and others hope smart contracts replace. The work by Karen Levy (2017), for example, considers the social aspects necessary to fair and functional contracts that are not resolved by smart contracts as of yet. Levy notes that these “documents” are viewed as merely technical artifacts, rather than as performing social functions. Additional early scholarship that also placed smart contracts within the purview of contract law has concluded that much is needed in order for previous standards to be satisfied. Werbach and Cornell’s (2017) study, for instance, found that while smart contracts offer “novel possibilities” and may “significantly alter the commercial world,” they will not replace contract law or its remedial function. Rather, they found that studying smart contracts have only made more obvious the need for contract law. This project hopes to continue this study of identifying where smart contracts might fall short or exacerbate current contractual issues early in their development so that they are not misused.

From a rhetorical standpoint, the situation that produced the technical fix-all attitude Szabo and his supporters spout has its roots in much more passionate discourse such as Timothy C. May’s 1992 “Crypto Anarchist Manifesto”:

Just as the technology of printing altered and reduced the power of medieval guilds and the social power structure, so too will cryptologic methods fundamentally alter the nature of corporations and of government interference in economic transactions. [...] And just as a seemingly minor invention like barbed wire made possible the fencing-off of vast ranches and farms, thus altering forever the concepts of land and property rights in the frontier West, so too will the seemingly minor discovery out of an arcane branch of mathematics come to be the wire clippers which dismantle the barbed wire around intellectual property [...] Arise, you have nothing to lose but your barbed wire fences!

While the connotations of May’s language invoke American ideals such as freedom, individualism, and also a sense of democracy as if cryptography will allow for equality by tearing down the “barbed wires” of previous hierarchies, the reality of the internet turned out very differently. Smart contracts similarly might reinforce

ideals already present in corporate industry, rather than free users of third-party regulation and oversight or abuse. This could be especially problematic if aspects of the inequality of previous contracts are not solved consciously prior to this automation. To illuminate, at a recent conference on blockchain uses in supply chains (“Using blockchain . . .”), Mac McGary of Sweetbridge, a nonprofit, open-source project that strives to “provide a set of rules, messages, and agreements that govern interactions of processes among humans, apps and machines,” noted how smart contracts could be used to track and monitor the actions of rice farmers, possibly giving them control over their labor efforts and, at the same time, increase the production of the farms. While this project seems to have good intentions, if smart contracts are tracking and automatically manipulating the terms of a labor contract, and the actual atomized unit tracked is a *human being* instead of a currency, the literacy, comprehension, and awareness issues typically associated with previous standardized contracts need immediate attention. Additionally, the types of oversight needed to prevent abuse in this high-stakes and sensitive situation should be sorted out so as not to allow these types of contracts to exist behind the scenes, further exacerbating “black-box” culture. Similar to how the early proponents of cyberspace who imagined a world free of material consequences were disappointed by the utilization of this freedom by fascists, Nazis, and other types of trolls (Fidler 2017), the cypher-punks who idealize blockchain technology and cryptocurrencies might be similarly disappointed to see its offerings (i.e., anonymity, automation, trustless transactions) be used in unintended ways. The bottom line is that smart contracts need to be studied as it does not seem that they will replace lawyers (at least completely, if perhaps some aspects of contracting) or other third-party oversight, and those aspects it does replace could ultimately hurt consumers – they could become less transparent contracts that consolidate power in the hands of the powerful few and ignore the needs of the many. And this vision is far from the democratic utopia many proponents currently imagine.

References

- Anderson T, Twining W (1991) Analysis of evidence: how to do things with facts based on Wigmore’s Science of Judicial Proof. Northwestern University Press, Evanston
- Bartoletti M, Pompianu L (2017) An empirical analysis of smart contracts: platforms, applications, and design patterns. ArXiv:1703.06322 [Cs]. Retrieved from <http://arxiv.org/abs/1703.06322>
- Ben-Shahar O, Schneider CE (2014) More than you wanted to know: the failure of mandated disclosure. Princeton University Press, Princeton
- Cassano J (2014) What are smart contracts? Cryptocurrency’s killer app. Fast Company. Accessed <https://www.fastcompany.com/3035723/app-economy/smart-contracts-could-be-cryptocurrency-s-killer-app>
- Castells M (1996) The rise of the network society. In: The information age: economy, society, and culture, vol I. Blackwell Publishers, Oxford
- Castells M (2007) Communication, power and counter-power in the network society. Int J Commun 1:238–266

- Clack CD, Bakshi VA, Braine L (2016) Smart contract templates: foundations, design landscape and research directions. ArXiv:1608.00771 [Cs]. Retrieved from <http://arxiv.org/abs/1608.00771>
- De Filippi P, Wright A (2018) Blockchain and the law: the rule of code. Harvard University Press, Cambridge
- Deming SH (2005–2006) The potent and broad-ranging implications of the accounting and record-keeping provisions of the Foreign Corrupt Practices Act. *J Crim Law Criminol* 96:465
- Duranti L (1994) Reliability and authenticity: the concepts and their implications. *Archivaria* 39:5–10
- Duranti L (2009) Diplomatics. In: Bates M, Maack MN, Drake M (eds) Encyclopedia of library and information science. Marcel Dekker, New York/Basel/Hong Kong
- Duranti L (2015) Digital records and archives in the commercial cloud. In: Yoo CS, Blanchette J-F (eds) Regulating the cloud: policy for computing infrastructure. MIT Press, Cambridge, pp 197–213
- Duranti L, Franks PC (eds) (2015) Evidence. In: Encyclopedia of archival science. Rowman and Littlefield, Lanham
- Ethereum Team (2017) Byzantium HF Announcement. Ethereum Blog. Retrieved from <https://blog.ethereum.org/2017/10/12/byzantium-hf-announcement/>
- Faife C (2017) A decentralized mixer for Ethereum? Zcoin is working on it. Coindesk. Accessed <https://www.coindesk.com/a-decentralized-coin-mixer-for-ethereum-zcoin-is-working-on-it/>
- Farmer D (2017) Coinbase obtains partial victory over IRS. The Coinbase blog. Accessed <https://blog.coinbase.com/coinbase-obtains-partial-victory-over-irs-dac041db59a3>
- Fidler B (2017) Eternal October and the end of cyberspace. *IEEE Ann Hist Comput* 39(1):6–7. <https://doi.org/10.1109/MAHC.2017.9>
- Foley MJ (2017) Microsoft, Intel, banks form Enterprise Ethereum blockchain alliance. ZD Net. Accessed <http://www.zdnet.com/article/microsoft-intel-banks-form-enterprise-ethereum-blockchain-alliance/>
- Frisby D (2016) How blockchain will revolutionise far more than money. Aeon Essays. Accessed <https://aeon.co/essays/how-blockchain-will-revolutionise-far-more-than-money>
- Furner J (2004) Conceptual analysis: a method for understanding information as evidence and evidence as information. *Arch Sci* 4:233–265
- Furner J, Gilliland AJ (2016) Chapter 20, Archival IR: applying and adapting information retrieval approaches in archival and recordkeeping research. In: Gilliland AJ, McKemmish S, Lau AJ (eds) Research in the archival multiverse. Monash University Publishing, Melbourne, pp. 581–631
- Gilliland-Swetland A (2000) Enduring paradigm, new opportunities: the value of the archival perspective in the digital environment. Council on Library and Information Resources, Washington, DC
- Gilson C (2017) Lightning's Elizabeth stark: 2017 will be the year of smart contracts. The Cointelegraph. Accessed <https://cointelegraph.com/news/lightnings-elizabeth-stark-2017-will-be-the-year-of-smart-contracts>
- Kerr O (2009) The case for the third-party doctrine. *Mich L Rev* 107:561. <https://repository.law.umich.edu/mlr/vol107/iss4/1>
- Kerr O (2017) Four thoughts on the briefing of carpenter v. United States. Lawfare blog
- Lemieux VL (2016a) Blockchain for recordkeeping: help or hype? Technical report, University of British Columbia, Vancouver
- Lemieux VL (2016b) Trusting records: is blockchain technology the answer? *Rec Manag J* 26 (2):110–139
- Lemieux V, Sporny M (2017) Preserving the archival bond in distributed ledgers: a data model and syntax. <https://doi.org/10.1145/3041021.3053896>
- Levy KC (2017) Book-smart, not street-smart: blockchain-based smart contracts and the social workings of law. *Engag Sci Technol Soc* 3:1–15
- Lichtblau E (2018) The FBI is in crisis. It's worse than you think. Time Magazine. Accessed <http://time.com/5264153/the-fbi-is-in-crisis-and-america-is-paying-the-price/>

- Lujan S (2017) Nevada senate bill 398 becomes law, Prohibiting Tax on Blockchain Technology Bitcoin.com. Accessed <https://news.bitcoin.com/nevada-senate-opts-to-prohibit-tax-and-regulations-on-blockchain-technology/>
- Mills D, Wang K, Malone B, Ravi A, Marquardt J, Chen C, Badev A, Brezinski T, Fahy L, Liao K, Kargenian V, Ellithorpe M, Ng W, Baird M (2016) Distributed ledger technology in payments, clearing, and settlement. Finance and economics discussion series 2016–095. Board of Governors of the Federal Reserve System, Washington, DC. <https://doi.org/10.17016/FEDS.2016.095>
- Oard DW (2013) Information retrieval for E-discovery. Found Trends Inf Retr 7:99–237. <https://doi.org/10.1561/1500000025>
- Olszewicz J (2017) Ethereum price analysis – network slowdown precedes fork. Brave New Coin. Accessed <https://bravenewcoin.com/news/ethereum-price-analysis-network-slowdown-precedes-fork/>
- Pasquale F (2015) The Black Box Society: the secret algorithms that control money and information. Harvard University Press, Cambridge, MA
- Raskin M (2017) The law and legality of smart contracts. Georgetown Law Technol Rev 1(2)
- Sills K (2018) The promise of smart contracts. Libertarianism.org. Accessed <https://www.libertarianism.org/columns/promise-smart-contracts>
- Spode EJ (2017) The great cryptocurrency heist. Aeon Essays. Accessed <https://aeon.co/essays/how-blockchain-will-revolutionise-far-more-than-money>
- Szabo N (1996) Smart contracts: building blocks for digital markets. Alamat. Accessed http://www.alamut.com/subj/economics/nick_szabo/smартContracts.html
- Title 3: Civil Rules (2007) California courts. Accessed <http://www.courts.ca.gov/rules.htm>
- Tufecki Z (2015) Algorithmic harms beyond Facebook and Google: emergent challenges of computational agency. Colorado Technol Law J
- Varadarajan T (2017) The Blockchain is the internet of money silicon valley. Wall St J. Accessed https://www.wsj.com/articles/the-blockchain-is-the-internet-of-money-1506119424?utm_medium=social&utm_source=twitter
- Wachter S, Mittelstadt B, Floridi L (2017) Why a right to explanation of automated decisionmaking does not exist in the general data protection regulation. Int Data Privacy Law 7(2):76–99
- Wall L (2016) ‘Smart contracts’ in a complex world. Federal Reserve Bank of Atlanta. Accessed <https://www.frbatlanta.org/cenfis/publications/Notesfromthevault/1607>
- Werbach K, Cornell N (2017) Contracts ex Machina. Duke Law J 67:313
- Wittie RA, Winn JK (2001) Electronic records and signatures under the federal E-SIGN legislation and the UETA. Bus Lawyer 56:293
- Yeo G (2007) Concepts of record (1): evidence, information, and persistent representations. Am Arch 70(2):315–343



Legislating for Internet “Access”-ability

36

Lucy M. Cradduck

Contents

Introduction	648
The Need for Recognition as a Separate Right	649
International Obligations	652
Domestic Implementations of a Right of Access	654
Judicial Considerations of Access to the Internet	655
Universal Service Obligations	660
Policy Suggestions	662
Conclusion	664
Cross-References	665
References	665

Abstract

The ability to access the content and services of the internet is an essential aspect of our lives. While used by many merely as a communication or entertainment tool, for those with disabilities or located in remote areas, *internet access* can enable a level of engagement with information, friends, and government that otherwise is not possible. Thus, through the use of the internet, other fundamental human rights are enabled. However, for the internet to be an enabler of those other rights, *internet access* first must be enabled. Preferably, this would occur by means of the international recognition of *internet access* as a fundamental human right *per se*, which is then supported by jurisdiction-specific policies and laws. Regrettably, this is not the current reality.

Absent recognition of *internet access* as a right *per se* all is not lost. Some jurisdictions already have taken steps or are taking steps to recognize this right. In others, the courts are beginning to engage with the essentiality of

L. M. Cradduck (✉)
Queensland University of Technology, Brisbane, QLD, Australia
e-mail: l.cradduck@qut.edu.au

internet access for everyday life. In yet others, work has been done or is underway to extend existing universal service obligations to internet and/or broadband services. This chapter examines why legislated recognition and protection of *internet access* as a right *per se* are necessary while identifying what actions have been, are being, or should be taken to ensure the ongoing “access”-ability of the internet for all.

Keywords

Internet Broadband · “Access”-ability · Rights · USO · Network neutrality

Introduction

The rights that are enabled through the use of the internet have acceptance generally, although admittedly not universally, as fundamental human rights (Gill et al. 2015). These rights include those relevant to communication, information access, and social and political engagement, which are essential aspects of day-to-day living both in the real *and* digital economies and which are sustained and supported by access to the internet. As the UN Special Rapporteur David Kaye observed, individuals now “depend on digital access to exercise [their] fundamental rights” (Kaye 2017, p. 20). However, while support for the recognition of *internet access* as a right of individuals continues to grow (Wang 2013), universal acceptance of *internet access* as a human right *per se*, as opposed to a mere facilitator of other rights (Joergensen and Marzouki 2015), or as a means of access to content and/or services, does not (Lucchi 2016). This ongoing lack of acceptance of *internet access* as a right *per se* continues to present a challenge for those with a lack of appropriate access to it. If this challenge is not met, then the development of more and better technologies, and better or different access for selected groups, typically those with financial and skills capacity, will serve only to further marginalize those whom the internet would support the most (Cradduck 2015). As Unwin (2013) observed “*the Internet, alongside other digital technologies, has increasingly marginalised those without access to it*” (p. 1). The word “access”-ability as used in this chapter therefore is used to mean an individual’s ability both to *connect to the internet* and *engage with online services and content* in a manner that is beneficial and meaningful to them.

A consequence of a lack of rights recognition is that the ability of any individual to access the internet can be constrained by any negative physical and/or personal circumstance. Their ability also will be constrained by jurisdictional regulations, which often are sought to be imposed irrespective of the individual’s actual location or the device used (Lodder 2017). Achieving “access”-ability will enable individuals to be fully engaged in the digital economy – failing to achieve “access”-ability for all will further widen the existing digital divide (Schejter et al. 2017). In Oozeer’s (2014) words: “*the problem [the digital divide now] encompasses refers to the gap between people with effective access to digital and information technologies, in particular the Internet, and those with very limited or no access at all*” (p. 348).

To enable “access”-ability, several obstacles must be overcome. The primary obstacle is how *internet access* is perceived. The internet is an essential utility

service similar to electricity and water, and similarly one with ongoing costs for users (Tully 2014). Therefore, the acquisition of skills to enable engagement *and* meeting the cost of access both require attention. Failing to appropriately consider how to enable participation and access by those with a constraint will result in the development of a flawed policy (Schejter et al. 2017). Further, focusing on infrastructure issues only has the potential to limit “access”-ability only to those individuals without disability or disadvantage.

Societally, the problem for which a solution must be found is how to ensure *internet access* for all while working to ensure the continuing development of the physical networks needed to support the internet and high-speed broadband. The solution is twofold. The first phase is to afford *internet access* the same international recognition as other fundamental human rights. Achieving this leads to the second phase, although completing this phase is not dependent entirely upon successful attainment of the first, that is, the adoption of relevant domestic government policies and the enactment of related laws to protect and promote *internet access*. The starting point for this solution is to understand what is meant by the right to *internet access* (Cradduck 2015), which cannot be viewed in isolation from other international obligations (Tully 2014).

The chapter commences by articulating the rationale for why recognition of *internet access* as a separate right is necessary and why this should be enshrined in legislation. It then provides an overview of relevant treaties and other international documents to identify the obligations these impose on domestic governments as relevant to *internet access* before considering how courts have ruled regarding individual’s access to the internet. Examples of domestic legislation and government policies that require or support *internet access*, which include policies and laws used to enable *internet access* absent a specific legislative right to access (e.g., by means of the extension of universal service obligations, “USO”), are then considered. The chapter concludes by making suggestions as to the policy process governments should follow in order to ensure “access”-ability for all.

This chapter is premised on the basis that *internet access per se* is a fundamental right that all should be able to exercise and governments should protect. However, as the US demonstrates, the path to enacted legislation is fraught with difficulties, and the end result is by no means certain (US 2015). Absent the recognition of this right by means of specific legislative enactment, there is still much that can and should be done to enable individuals’ “access”-ability within the existing legislative frameworks. What the chapter seeks to achieve is an increased understanding of what can and should be done to enable “access”-ability now.

The Need for Recognition as a Separate Right

Absent full engagement by at least the majority of the population, the internet will not reach its full potential, either as an enabler of the broader economy (Cradduck 2015) or as a champion of the disadvantaged. Further, where there is a lack of effective *internet access*, individuals will not be able to access services or information or to participate in and with their government as they wish. The expansion of

“gadgets” should not mask the fact that not all are engaged. Mobile phones are now everyday devices; however, increased levels of mobile phone ownership do not necessarily translate into effective use of those devices to access the internet. This is particularly so for those with financial constraints (Humphry 2014). A consequence of a lack of engagement is that those from broader and perhaps less obvious portions of the community will become disadvantaged. In the USA, Congressman Bobby L. Rush referred to these people as the “*chronically and disproportionately disconnected segments of our society*” (US 2015, p. 24).

Many jurisdictions now have progressed beyond the stage of having a minimum level of appropriate infrastructure in place to enable internet access and as such must now look to adopt “*policies and strategies . . . which make the Internet widely available, accessible and affordable for all*” (Tully 2014, p. 185). Regrettably, many governments instead work to prevent access to the internet, for example, by taking actions such as *shutdowns*, rather than to enable it (Kaye 2017). Further, even without such actions, financial constraints can impact upon an individual’s “access”-ability as well as their acquisition of more than *basic digital skills* and thus lead to an ever-widening digital divide (Reisdorf et al. 2017). This divide continues to exist not merely between developed and developing countries (Martin 2012) but also within developed countries (OECD 2013). Perhaps of more concern for our aging populations is that a digital divide exists between the different age groups (McDonald et al. 2016). This is exacerbated by a variety of factors, such as health, education, location, and trust, which also act as barriers to individuals’ internet access and use (Showell 2017).

The non-infrastructure aspects of enabling access therefore should be a more central concern of governments in the implementation of their future networks. To date, however, the focus of the development of high-speed broadband networks has tended to be on the cost and practical issues of construction and physical access rather than the ability (personal skills) of individuals to access that infrastructure and engage with content and services. This is reflected in the disparity evidenced in some jurisdictions between relatively high levels of physical access by households to the internet in comparison with low levels of *basic digital skills* (EC 2018). In the context of this chapter, digital skills are the skills that are essential in order to attain “access”-ability. Currently, however, many lack *basic digital skills*, being those required to use a “*mailbox, editing tools [and] installing new devices*” (EC 2018).

Available data from the *Digital Economy and Society Index* (EC 2018) reinforces the impact that access costs continue to have on the number of citizens who are able to acquire at least *basic digital skills*. For example, although relatively close physically, in 2014 the skills difference between residents of the UK and Ireland was noticeable. In the UK, the percentage of an individual’s income needed to pay for fixed access was 0.85%, with 73% of its citizens (aged 16–74) having at least *basic digital skills*; in comparison, in Ireland, where 2.2% of an individual’s income was required, only 53% had at least *basic digital skills*. Even with a relatively high portion of the UK population with basic skills, the House of Lords (2015) observed there was the need to improve skill levels as “[t]here is a shortage of medium- and

high-level digital skills in the UK. This needs immediate attention if the UK is to remain competitive globally" (p. 10). In response, the Commons proposed several strategies aimed to upskill businesses and provide appropriate skills to students (House of Commons 2016). In 2016 the percentage of a UK income needed to pay for fixed access was 1.3%, with 69% of its citizens having basic digital skills. Concurrently in Ireland, although the cost of access had reduced to 1.9% of an individual's income, only 44% had *basic digital skills*. In the 2018 report, the DESI was recalculated, with some data reported in different ways, including regarding that of cost. The result being that for 2017, the UK is shown to have had 71% of citizens with basic digital skills with a Broadband Price Index ('BPI') score of 86 (the same as that for 2016); while Ireland had only 48% of citizens with basic digital skills with a BPI score of 77 (increased from 72 in 2016) (EC 2018).

The correlation between cost of access and digital skills levels is seen in other countries. Other 2014 examples of this relationship include Bulgaria (2.1% income), Croatia (3% income), and Cyprus (3% income), which had low (34%, 39%, and 48%) levels of citizens with *basic digital skills*. This position was little altered in the 2017 DESI report: Bulgaria (1.7% cost) and Cyprus (2.4% cost) continued to have low (26% and 43%) levels of citizens with at least *basic digital skills*. However, in Croatia, with cost at 2.9% in 2016, 55% of its citizens had basic skills. In 2017 there was generally small improvements in these countries as regards access costs and skills but citizens with basic digital skills still remained low: Bulgaria had a BPI score of 80 (increased from 76 for 2016) with 29% citizens with basic digital skills; Cyprus had a BPI score of 65 (increased from 62 for 2016) with 50% citizens with basic digital skills; and Croatia had a BPI score of 80 (increased from 76 for 2016) but no data was available regarding its citizens' basic digital skills. (EC 2018). These findings serve to reinforce Helsper's (2008) observations that "[t]here is a continued need to support people and communities in accessing technology and in acquiring the literacy skills required to consume and produce digital media both at home and in the workplace" (p. 15 emphasis added), or as Schejter et al. (2017) more recently observed "*policy cannot stop at providing physical access alone, access needs to be effective as well*" (p. 244). To be effective requires addressing issues of financial and skills capacity as well (Cradduck 2015).

Acknowledging that a variety of factors impact adversely on skills acquisition, it remains that it is the role of the government to take the lead to bridge the digital divide (Kummer 2012). Governments' policy and processes need to ensure that their citizens are not disadvantaged through lack of basic digital skills or through other barriers to their successful engagement (Showell 2017). This requires that individuals must be supported in order to make the most of the current and future infrastructure and access mechanisms.

A primary benefit of any legislated right is that it is, commonly, accompanied by a mechanism by which the right easily can be enforced so the individual, or those acting on their behalf, may prevent infringement of the right by others and receive redress if it is breached. This is more commonly observed in respect of consumer protection laws where a variety of mechanisms are available to assist individuals in addition to traditional litigation through the courts, for example, through a regulatory

oversight body or Ombudsman. The ease of use of such services is not found in the litigation process, even in the lower courts.

In view of the internet's ability to enable other rights (La Rue 2011), and the negative impact of a lack of the ability to engage with those rights, *internet access* as a right *per se* needs the protection that only legislation, with attaching legislative remedies, can provide. As Dr. Turner (2015) stated “*broadband access, adoption and digital literacy join the suite of civil rights prerequisites to first-class citizenship in the digital age*” (p. 4). Ultimately, therefore, the need for specific international recognition of *internet access* as a standalone right remains. Anything less is inadequate.

International Obligations

Significantly, no single treaty currently imposes a positive obligation on individual governments to ensure access to the internet (Joergensen and Marzouki 2015). However, there are a number of international treaties, obligations, and agreements that may be utilized to support rights. Crucially these generally are *not* restrictive of a jurisdiction's ability to control or restrict access to what they perceive to be inappropriate content or services.

The *Universal Declaration of Human Rights 1948* is perhaps the most widely recognized source of human rights. Addressing a variety of concerns, the rights in Articles 19, 21, and 26 are supportive of a “right” to *internet access* and now are dependent upon the internet for the exercise of those rights. These Articles reinforce the fact that freedom of opinion and expression, participation in and access to government, and a right to education are essential for engagement in any life. Article 19(2) of the *International Covenant on Civil and Political Rights* similarly provides a right of freedom of expression but also “*does not guarantee a right to the “Internet” . . .*” (Land 2013, p. 394). However, as the UN (2016) affirmed:

the same rights that people have offline must also be protected online, in particular freedom of expression, which is applicable regardless of frontiers and through any media of one's choice, in accordance with articles 19 of the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights

Article 10(1) of the *European Convention for the Protection of Human Rights and Fundamental Freedoms* equally is important as it provides a guarantee for freedom of expression “*without interference by public authority and regardless of frontiers.*” In the context of enabling access to the information and services available on the internet, this guarantee, which encompasses the “*right to information through the technical means of communication*” (Herr 2013, p. 1), is important and recognized as one that applies equally in the digital environment, albeit subject to the constraints of Article 10(2). Further, Article 10(1) does not guarantee access to any particular source or means of access. As Tiilikka (2013) articulated, in the context of information held by government, “*it is not yet a rule that [public] authorities have a general duty to produce or seek information for a requesting party*” (p. 80).

More specifically, the EC's *Internet Freedom Provision*, in conjunction with the extension of the EU's USO to internet connections, arguably establishes the *ongoing* right to *internet access* as a fundamental human right. However, it does not create right of *internet access* (Dods et al. 2010). How initial access is to be treated and enabled is left to the national regulators to determine. The consequence is that some national regulators view the Provision as the establishment of a right while others do not. The EC's *Resolution on the Promotion and Protection of Human Rights on the Internet 2012* confirms that individuals have the same rights *online* as *offline* (Article 1), reinforces the import role that an *open* internet will play in future developments (Article 2), and recognizes the need for individuals to have *internet access*. The Council:

Calls upon all States to promote and facilitate access to the Internet and international cooperation aimed at the development of media and information and communications facilities in all countries (Article 3).

The *Seoul Declaration for the Future of the Internet Economy 2008* had the potential for wide-ranging impact as its Signatories agreed to “*work together to promote ubiquitous access to ICT networks and services enabling widespread participation in the Internet Economy.*” This included working to “[e]xpand Internet access and use worldwide” (p. 5). In 2013 the OECD noted that while *internet access* was constantly increasing, in developed countries, efforts had been less effective. The need for improved skills development in developing countries was recognized as an ongoing challenge as was the need for both “*enhanced international interconnection and improved national connection*” (OECD 2013, p. 151). It is likely that such enhancements will continue to face difficulties. This is because the national connections to the internet, which are more commonly now occurring by means of fiber networks and related infrastructure, will be dependent on the circumstances peculiar to individual ICT providers. Relevantly, many jurisdictions rely only upon private entities or existing utility providers for deployment of this infrastructure (OECD 2013, p. 63).

Having the potential for the broadest impact were the UN's 2000 *Millennium Development Goals* (“MDG”), of which *Goal 8.F* was directed to overcoming the issue of a lack of *internet access*. In 2010, as part of its ongoing commitment to achieving the Goals, the United Nations (“UN”) reaffirmed the need of governments to work with industry to make the benefits of ICT available to all (UN 2010). As Gulatti and Yates (2012) noted, “[w]orldwide access to high-speed internet [was] also one of the priorities for advancing” the MDGs (p. 750). However, as Oozeer (2014) identified, the success in domestically implementing the Goals was relative to the economic position of the jurisdiction and its citizens, with “[d]igital opportunity in low-DOI economies . . . still expressed in terms of potential access to the Information Society that has not yet been fully realised” (p. 348). This was consistent with the review findings of the UN (2013), which noted that “[i]n the developing world, 31 per cent of the population use the Internet, compared to 77 per cent of the developed world” (p. 52). The UN's *Sustainable Development Goals* (“SDG”), designed to build upon and complete the unfinished work of the MDG, were adopted

by Members in September 2015. Goal 9.c, which sits within *Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*, is directed specifically to the need to enable access to the internet. This provides that signatories will “[s]ignificantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.”

Internet access therefore, while not specifically enshrined in one universally accepted document, is clearly viewed most commonly as a fundamental essential of life even if not as a separate right. As such, it has a level of recognition and support at an international level, albeit though not articulated in a manner that requires all jurisdictions to recognize and implement it domestically (Tully 2014). Implementation at domestic levels therefore is less consistent and less effective.

Domestic Implementations of a Right of Access

Specific recognition of *internet access* as a right (however so called) is limited. Most jurisdictions, however, have some form of broadband strategy, which generally are directed to ensuring the construction and/or deployment and management of state-owned, controlled, or regulated broadband infrastructures. The countries that have legislated for *internet access* as a separate *right* are mixed as are the specific rights enacted. Some jurisdictions have taken the opportunity to enshrine the right in their constitution, while others have enacted separate laws. This action is being taken by some jurisdictions on their own initiative, while others are doing so to comply with one or more of their international obligations.

The physical nature of the various means of access to the internet has resulted in a level of individual domestic government regulation of internet-based behaviors, although not necessarily regulation that enables internet “access”-ability, nor that which is universally or consistently applied. Similarly, the need to utilize existing infrastructure, more commonly those constructed for telephony and other telecommunications services, has attracted a level of government regulation. Divergent domestic government policies, and often changes of government, mean that at any given time, one jurisdiction’s government can view the need for *internet access* in numerous and potentially inconsistent ways. This affects the existence, and content of domestic policy and related legislation germane to a variety of internet-related rights. It also inhibits the achievement of international consensus on the status of *internet access* as a right *per se* and what this means for individuals seeking to rely on that right. Regrettably, even where a specific right exists, this does not ensure “access”-ability in reality.

Estonia was one of the first jurisdictions to address *internet access* as a right, albeit in a limited way. In 2003 Estonia prescribed a right to *internet access* by means of provisions in its *Public Information Act 2000* that enable access in public libraries as well as access to select categories of public information. *Internet access* is facilitated through procedures established in Section 15 of the *Public Libraries*

Act. Its recognition of these rights places Estonia ahead of many comparable post-Soviet jurisdictions (Liebert et al. 2013); however it is noted that while *internet access* is free, the information that may be accessed is limited and the fact of access must take into account the needs (and priority) of others. Further, in comparison to other European jurisdictions, the existence of this right does *not* translate into a proportionally higher level of citizens with basic digital skills and better "access"-ability. In 2014 69% of the population had at least *basic digital skills*; however, in 2017 this had reduced to 60% (EC 2018).

The recognition by Greece of a right to *internet access* is perhaps more direct. In 2008 *The Constitution of Greece* was revised by Parliament resolution of May 27, 2008. Encompassed within its new right that "*All persons have the right to participate in the Information Society*" (Article 5A) is the right of citizens to "*participate in the Information Society*." This right is enabled by the fact that "*[f]acilitation of access to electronically transmitted information, as well as of the production, exchange and diffusion thereof*" is an obligation imposed upon the State (Article 5A.2). Again, however, the fact of the mere existence of such a right to *internet access* does not translate into a more engaged citizenry. In 2014 only 45% of the population of 16–74-year-olds had at least basic digital skills, with this increasing slightly in 2016 to 46% (EC 2018).

Irrespective of jurisdiction, a consistent implementation of an *internet access* right must overcome several hurdles. A primary hurdle is that existing treaties do not recognize or approach *internet access per se* as a separate right (Tully 2014). Assuming international recognition is achieved, uniform adoption of those rights within any one country is not easy. In an Australian context, for example, the required method of treaty adoption – by specific enactment – together with the lack of a federal Bill of Rights, mean that rights generally are not clearly or consistently defined. The mere signing of a treaty also does not mean that a new law will be enacted as the government may merely seek to rely on existing laws as the means of complying with their international obligation. Further, even where specific rights laws exist, these tend to define what rights are protected and then limit the protection granted to particular circumstances or to select service providers only. Finally, the effectiveness of any new law will only be known after matters have been litigated, which may take many years to conclude (US 2015).

Judicial Considerations of Access to the Internet

The lack of a specific legislated right of *internet access* does not prevent courts from finding related rights exist. However, more commonly, courts have been concerned with issues arising regarding technical means of transmission; inappropriate blocking of content; copyright infringement; or the application of Article 10 of the *European Convention for the Protection of Human Rights and Fundamental Freedoms*. Nevertheless, the "*dynamic interpretation [of Article 10] as a living instrument*" in *Autronic AG v. Switzerland* [22 May 1990] ECHR makes

Article 10 available to assist in enabling *internet access* (Herr 2013). Article 11 of the *Charter of Fundamental Rights of the European Union* also may assist (Lucchi 2016).

However, absent a specific legislated right, *internet access* is not assured. For example, in the USA, even with its constitutional protection of the right of freedom of speech, their courts have not as yet found that an *internet access* right *per se* exists as a separate right, which has led to different results depending upon the matter and the court. Also, as commentary from late last century reflects, absent the financial capacity to exercise their constitutional right to freedom of speech, an individual in the USA does not have a right to be assisted financially in order to exercise their constitutional right (Snyder 1996). Even in the context of a person with a recognized right of access to the goods or services of a public accommodation under the *Americans with Disabilities Act*, effective *internet access* still is not guaranteed (Harpur 2013), an issue that, arguably, is exacerbated by the divergent positions adopted by the various US courts. Therefore, while US citizens and residents generally benefit from the right of freedom of speech, which is a right that may not apply in other countries, the divergent views of its various court circuits may inhibit those individuals in their digital engagements. As Burke et al. (2016) observed “[t]he legal requirements for accessibility are arguably unsettled and complicated” (p. 161). Their impact also depends upon your location.

Noting that in any event the rights under the ADA do not extend to persons without a disability, the ADA's effectiveness in a purely digital environment appears constrained. For example: in *Access Now, Inc. v Sw. Airlines*, Co 227 F. Supp. 2d 1312 (S.D. Fla. 2002), a website owner, albeit of a commercial site, could not be made to enable access to that website. The US District Court for the Southern District of Florida did not find any breach of any right of access in respect of the relevant website, as the website lacked the necessary physicality to support a finding that access should be compelled. Ten years later the US District Court of Massachusetts found favorably for the plaintiffs and against Netflix, Inc. (*Nat'l Ass'n of the Deaf v. Netflix, Inc.*, 86 g F. Supp. 2d 196, 202 (D. Mass. 2012) holding the ADA applied to websites (the action was ultimately settled by consent without further litigation). In 2017, however, Mr. Kidwell failed when the Middle District Court of Florida ruled the defendants' websites were not a “*physical or public accommodation*” (*Kidwell v Florida Commission on Human Relations and SeaWorld Entertainment, Inc.* 2017 WL 176897 (M.D. Fla. Jan. 17, 2017):11).

Where the defendant's website has a connection with the defendant's physical premises, the ADA plaintiff is likely to be successful (*Nat'l Fed'n of the Blind v. Target Corp.*, 452 F.Supp.2d 946 (N.D. Cal. 2006). This was considered in *Gil v. Winn-Dixie Stores, Inc.* No. 1:16-cv-23020 (S.D. Fla., slip op. June 12, 2017), where that court found the website was “*heavily integrated*” with the defendant's physical location. Regrettably, because of that fact, that court did not take the opportunity to separately consider whether the ADA applied to a website *per se*. The court, however, did observe that the defendant “*knows that it is feasible to make its website accessible to screen reader software and has set aside \$250,000 to do this*” (p. 5). A tacit acknowledgement of right perhaps?

More recent decisions from New York appear more favorable. In *Markett v Five Guys Enterprises LLC*, 2017 WL 5054568 (S.D. N.Y. July 21, 2017) the Southern District Court of New York, in denying a motion to dismiss, held *inter alia* that “*the text and purposes of the ADA, as well as the breadth of federal appellate decisions, suggest that defendant’s website is covered under the ADA, either as its own place of public accommodation or as a result of its close relationship as a service of defendant’s restaurants, which indisputably are public accommodations*” (p.2). In a decision only ten days later, the Eastern District Court of New York in the matter of *Andrews v Blick Art Materials, LLC* 268 F. Supp.3d 381 (E.D.N.Y. 2017) also denied a motion to dismiss. After noting that the ADA “*does not contain a definition of the term “place of public accommodation”*” (p.388) the court engage in an detailed consideration of recent and relevant decisions, as well as examining the purpose of the ADA. The conclusion of that consideration being that the court held *inter alia* that “[a] rigid adherence to a physical nexus requirement leaves potholes of discrimination in what would otherwise be a smooth road to integration. It would be perverse to give such an interpretation to a statute intended to comprehensively remedy discrimination” (p.397) and “*internet technology enables individuals to participate actively in their community and engage in commerce from the comfort and convenience of their home. It would be a cruel irony to adopt the interpretation of the ADA espoused by Blick, which would render the legislation intended to emancipate the disabled from the bonds of isolation and segregation obsolete when its objective is increasingly within reach*” (p.398) [10]. Finally in *Del-Orden v Bonobos, Inc.* 2017 WL 6547902 (S.D.N.Y. Dec. 20, 2017), a decision handed down the day before a settlement was approved in the *Andrews v Blink* matter (see Memorandum and Order 17-CV-767), the Southern District Court of New York held *inter alia* that “*the ADA applies to commercial websites in general. The Court is further persuaded that, even if this were not so, the ADA clearly applies to private commercial websites which (as here) operate in tandem with the merchant’s conventional (i.e., brick and mortar) places of public accommodation.*” (p.8).

The number of applications under the ADA regarding access to websites grows daily. However, despite the positive results above, particularly in light of the proposed amendments to the ADA currently before the US Senate (H.R. 620 - 115th Congress (2017-2018) Feb. 26, 2018), it would appear that absent a higher court decision, or a more clearly articulate right of access, or a connection or nexus with a provider’s physical premises, and despite the ADA previously having been held to apply to both tangible and intangible barriers (*Rendon v. Valleycrest Prods., Inc.*, 294 F.3d 1279 (11th Cir. 2002):1283), the effectiveness of the ADA in protecting rights of access to a website *per se* remain uncertain. Further, there is an inequality of positions in any ADA litigation as between the individual and the website owner that would not be a concern if a right existed. This was highlighted in *Mardel, Inc. v. Hunter*; 2017 WL 157744 (E.D. Ark. Jan. 11, 2017), when, although the litigation was “settled” by the plaintiff electing not to proceed, Mardel Inc. pursued her for declaratory relief that *inter alia* its website did not offend the ADA, relief the court did not grant. Defending such actions attracts a financial

cost to the individual, even if it is one that is paid by others or undertaken pro bono, as well as an emotional cost.

In *Jodhan v. Canada (Attorney General)* [2001] 2 R. C.F. 355., involving a lack of access to government websites, the Canadian Federal Court had to determine “whether the federal government breached the applicant’s right to equal treatment under subsection 15(1) of the [Canadian Charter of Rights and Freedoms] either by creating inadequate Internet accessibility standards or by failing to enforce and implement existing standards” ([75]).

Section 15(1) provides:

Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability.

The Court did not consider whether or not *internet access* was a right *per se*. Rather, observing “[t]he law should not have a less beneficial impact on the blind than on sighted persons” ([137]), it held the applicant had “not received the equal benefit of the law without discrimination based on her physical disability and that this is a violation of subsection 15(1)” ([1]). This applicant was successful because the website failed to meet relevant accessibility standards (Tully 2014).

In 2009 the French Constitutional Court was required to consider whether:

... giving an administrative authority, albeit independent, the power to impose penalties in the form of withholding access to the internet, Parliament ... infringed the fundamental right of freedom of expression and communication (Decision No. 2009-580DC [11]).

Article 11 of the French *Declaration of the Rights of Man and the Citizen of 1789* provides “[e]very citizen may thus speak, write and publish freely, except when such freedom is misused in cases determined by Law.” The Court observed:

The powers to impose penalties created by the challenged provisions vest the Committee . . . , which is not a court of law, with the power to restrict or deny access to the internet by access holders and those persons whom the latter allow to access the internet. The powers vested . . . are not limited to a specific category of persons but extend to the entire population. The powers . . . may thus lead to restricting the right of any person to exercise his right to express himself and communicate freely, in particular from his own home . . . in view of the freedom guaranteed by Article 11 . . . Parliament was not at liberty . . . to vest an administrative authority with such powers . . . ([16]).

The Court held “[i]n the current state of the means of communication and given the generalized development of public online communication services and the importance of the latter for the participation in democracy and the expression of ideas and opinions, this right implies freedom to access such services” ([12]). The challenged provisions were held to be unconstitutional, and access to the internet was declared to be a right. In July 2013 the French Parliament revoked the offending penalties.

In 2010 the Costa Rican Constitutional Court effectively recognized *internet access* as a fundamental right. In *Guzman and Ors v Ministry of the Environment, Energy and Telecommunications, Office of the President*, July 30, 2010, Supreme Court of the Supreme Court Costa Rica, [Constitutional Court] Res. N° 2010-012790, in the context of the *General Telecommunications Law* enacted pursuant to obligations under the *Free Trade Agreement between the US, Central America and Dominican Republic*, the Court held:

... the delay verified in the opening of the telecommunications market has not only violated the right enshrined in Article 41 of the Constitution but also has affected the exercise and enjoyment of other fundamental rights such as ... the right of access to the internet interface chosen by the consumer or user and business freedom and trade (V).

Separately (and perhaps more controversially), access to the internet has been the subject of courts' consideration in criminal cases. For example, in November 2012, the UK Court of Appeal Criminal Division heard an appeal against one ground of the "sexual offences prevention order" imposed as part of the defendant's sentence following a plea of guilty regarding offences relating to "*voyeurism, possession of photographic images of children and possible on extreme photographic images*" (*R v Jackson* [2012] EWCA Crim 2602 at [1]). The order *inter alia* prohibited Jackson from:

1. Accessing the Internet through any computer, mobile phone, smart device or television, except under the supervision of an employer.
2. Owning, possessing, using, or having in his household any computer, mobile phone, smart device or television capable of accessing the Internet [6].

In considering the appropriateness of the terms of the order, the Court observed "*it is prima facie unreasonable to require anyone not to have any means of accessing the Internet in their home*" ([12]). The Court further observed many telephones have internet capabilities, and in the circumstances, the order as worded was inappropriate. A substituted order was made, which enabled Jackson to use an internet-enabled device, provided it had the capacity to record its use history. The substituted order also precluded him from deleting that history ([13]).

More recently the US Supreme Court in June 2017 in *Packingham v North Carolina* 582 US (2017) (No 15-1194) was required to consider the constitutional validity of a 2008 North Carolina law, which made "*it a felony for a registered sex offender to gain access to a number of websites, including common place social media websites...*" if the websites enabled children to be members (p. 1). Packingham, a registered sex offender, posted on Facebook a statement about a dismissed traffic offence; he was prosecuted under that 2008 law and given a suspended sentence (p. 3). He appealed to the Court of Appeals of North Carolina and won (p. 3) but that decision was overturned by the State Court of Appeals (p. 4). He then appealed to the Supreme Court, who ruled the law was unconstitutional, being in breach of the First Amendment. Relevantly, the majority held "*to foreclose access to social media altogether is to prevent the user from engaging in the*

legitimate exercise of First Amendment rights" (p. 8). Both the majority and minority held the law was too broad, and the State had not evidenced it was necessary. A more narrowly drafted law, therefore, may well be upheld in the future.

In any event, courts are constrained in their ability to recognize rights or apply existing laws beyond the realms of constitutional validity. Further, even in common law jurisdictions with otherwise adventurous courts, the most long awaited juridical precedent can be undone relatively quickly by the passage of contrary legislation. It is at this point that "access"-ability may be achieved more quickly by adapting or extending existing obligations.

Universal Service Obligations

One means by which *internet access* can be achieved is by extending the USOs implemented in respect of telephony services (OECD 2012). However, the effectiveness of a USO in achieving "access"-ability will depend upon its exact nature and scope. This in turn will depend upon the particular jurisdiction, their level of development, and their existing technology and infrastructure (Blackman and Srivastava 2011).

USOs are designed to ensure telephony service provision to consumers. In various instances, designated funding covers the cost of USO services with the effect that this cost is borne equally by all users (Rauen et al. 2011). However, many jurisdictions merely make services available without providing the extra financial assistance that, even with the USO concession, some individuals require in order to engage with those services (Cradduck 2015).

The extension of a USO to *internet access* in combination with an effective financial aid program would mean that all individuals, irrespective of location, will be able to attain and maintain access to the internet (Cradduck 2015). This would have positive flow on economic benefits to the wider community (Prasad 2013). Conversely, inequality of service provision and capacity to use those services can have negative social and economic impacts (Salahuddin et al. 2016). More commonly it is telephony that remains the policy focus (ITU 2012).

Finland led the way by extending its USO from July 1, 2010 to high-speed broadband by its 2009 Decree 732/2009 of the Ministry of Transport and Communications, which set the minimum rate of functional access. Subsequently, the 2014 amendments to the Finnish *Telecommunications Law* prescribed a minimum access of 1Mbps as a universal service to both domestic and business consumers, which may be achieved by means of either fixed or wireless connection. This increased to 10Mbps by 2017 and is to increase to 30Mbps by 2020. Ireland similarly extended its USO effectiveness from July 1, 2011.

Several jurisdictions subsequently have adopted or incorporated broadband into their USO. These include Chile and India (Prasad 2013); Jordan, Malaysia, and Pakistan (ITU 2012); the USA (Kruger and Gilroy 2016); Spain (Síndic de Greuges de Catalunya 2013); and Brazil (Rauen et al. 2011). More recently Canada, which originally decided to rely on existing policies and target speeds (Ryan 2012), joined

these jurisdictions. In late 2016 the Canadian Radio and Telecommunications Commission expanded the meaning of “*basic telecommunications services with the meaning of subsection 46.5(1) of the Telecommunications Act . . . [to include] . . . fixed and mobile wireless broadband Internet access services.*” These examples are not exhaustive: as other jurisdictions continue to work towards similar goals happily the list will continue to grow.

Others, such as the UK, are (still) working to finesse the details of their regimes. The *Digital Economy Act*, which became law on April 27, 2017, enabled a “*universal service order*” to require “*that broadband connections and services must be provided to any extent*” (s.1(4) amending Section 65 of the *Communications Act 2003* (UK)). The UK government’s review as to the appropriate upload and download speeds closed on October 9, 2017 (DDCMS 2017) and on 20 December 2017 a speed of 10Mbps was announced (DDCMS 2017a). Subsequently *The Electronic Communications (Universal Service) (Broadband) Order 2018* was made the UK parliament on 28 March 2018, which was effective from 23 April 2018. However, with the regulatory implementation of the new USO “*to take up to two years from when the Government lays its Order to complete*” (DDCMS 2017, p. 32) the benefit of this action remains delayed. In any event, as Dini et al. (2012) previously identified, the reality it may in fact be that it will be another 12 years *after* full rollout before all individuals in the UK can have “access”-ability. In other jurisdictions, the issue remains under significant discussion (Madureira et al. 2012). In yet others, ongoing political and other turmoil will continue to impede the implementation of related programs (Martin 2012).

The issue of *internet access* was considered by the US Congress in 2015 in the context of the proposed (but unsuccessful) attempt to “*amend the Communications Act of 1934 to ensure Internet openness, to prohibit blocking lawful content and non-harmful devices, to prohibit throttling data, to prohibit paid prioritization. . .*” However, the Congress’ consideration then was primarily on the Title 1 v Title II divide – rather than the consideration of access to an essential service (US 2015). The proposed amendment sought *inter alia* to expand Title 1 services to include “*broadband Internet access service*” within the definition of *information service* and thus not subject to the common carriage provisions relevant to telephony services as contained with Title II. The concern, in the view of several hearing witnesses, is on the *commercial aspects of internet access* and network neutrality rather than the *individual users’ position* (US 2015).

While Kaye (2017) asserts that the “*positive duty to promote freedom of expression argues strongly for network neutrality in order to promote the widest possible non-discriminatory access to information,*” the ability to ensure appropriate access is compounded by the fact that one jurisdiction’s idea/ideal of network neutrality, and how this is regulated, is not the same as that of another jurisdiction. As Vincent Cerf has observed (2016):

Net neutrality is a term that has taken on many apparent meanings and has served to provoke many debates over the past several years. The issues that invoke the use of the term vary depending on geography, economic and business conditions and regulatory environment.

A consequence is that the arguments for or against net neutrality may be inconsistent when compared side by side. (p.v)

Disturbingly, if a USO refers to enabling *internet access* merely by reference to a specific speed or technology, it is unlikely to be able to properly support future access needs (Síndic de Greuges de Catalunya 2013). It is important therefore that any *internet access* law or policy is carefully and specifically developed. Although the number of countries who are acting to prescribe access is growing, such action is perhaps not fast enough as a significant portion of the world's population continues to be unconnected and without the necessary basic digital skills (EC 2018). As US Congressman Greg Walden observed, the choice facing legislatures is to either “*use a statute written for another era to cobble together a regulatory scheme*” or to “*do [their] job and craft a new law for this century*” (US 2015, p. 3). The preference should be to achieve the latter, that is, to seek and craft a new policy, which is the starting point to establish an *internet access*-focused law.

Policy Suggestions

As US Congressman Michael F. Doyle previously noted, policy as relevant to technology and the internet “*needs to be flexible, not prescriptive*” (US 2015, p. 10). Therefore conversations that focus on the differences between *fixed v mobile* and *wired v wireless* arguably only serve to confuse matters. Also, where parties seek to maintain a position by reference to the identity of the market involved – i.e., *broadband v dial up v mobile* – this focuses on only one very technical and very specific market and one in which only an elite number of participants is involved. That is the ISP or supplier of the infrastructure. It is submitted that, in recognition that some users still engage with older forms of access, the focus instead should be directed to enabling *internet access* by whatever means. In this way matters relevant to suppliers will not be confused with ensuring “access”-ability for individuals.

It is a mistake also to focus on the competition issues of a market or to approach issues from the perspective that the internet is *not* a natural monopoly. Within the broader framework of the digital economy, the internet is a space and market unto itself and a unique one such that it is a monopoly source of data, information, community, and communications. Ensuring access to this source should be the focus of policy and legislation, and it is in this respect that there should not be a monopoly created or a monopoly provider established. In consideration of the adverse reaction that the use of the term “monopoly” tends to attract, it perhaps would be more helpful therefore to refer to the internet not as “market” but rather as a “place” in which many and various activities and engagements occur.

The issues that arise in reaching this “place” are more relevant to answering questions of space or geography rather than competition or antitrust, with a focus being on how to get there rather than what to do once there. Therefore, from an “access”-ability perspective, the current competition and antitrust laws should be

redesigned to ensure technology and *place* neutrality, with emphasis upon the nature of the conduct under review rather than the technology in use. Acknowledging that as regards the ISP and suppliers, other specific laws may be needed, as are currently articulated in many jurisdictions, requiring or permitting (as relevant) access to the infrastructure or cables or pipes of another ISP or supplier. The access issues that arise then should be addressed in a technology-neutral (Lodder 2013) and access-method-neutral language in order to encompass all current, proposed, and as-yet-dreamed-of access mechanisms (Cradduck 2015). To do otherwise is to restrain future operations by reference to what will be outdated means and language.

The most appropriate starting point for legislating specifically for an "access"-ability is to develop targeted, technology-neutral, and future-proofed policy with input from policy-makers, regulators, and practitioners who understand the workings of both the law and the internet. As to how an *internet access* policy should be developed, guidance is available from various sources as to both the matters requiring consideration and the appropriate process that should be followed. The OECD's *Recommendation on Principles for Internet Policy Making* is a key starting point. The Recommendations address matters that "*in developing or revising their policies for the Internet Economy, Members, in co-operation with all stakeholders [agreed to] take [into] account*" (OECD 2011, p. 3). In noting *inter alia* the Members' acknowledgment of "*reliance of [domestic] economies on the Internet*" and its "*global nature*," the principles most relevant to consider in respect of *internet access* issues are:

1. Promote and protect the global free flow of information
2. Promote the open, distributed, and interconnected nature of the Internet
10. Maximise individual empowerment
11. Promote creativity and innovation (OECD 2011, p. 6)

Guidance also is available from Lodder's (2013) *Ten Commandments of Internet Law*. These, in their final form, are:

- I. Thou shall understand the Internet
- II. Thou shall correctly link the virtual to the physical
- III. Think out of the box
- IV. Aim for technological neutrality
- V. Valorize and inform
- VI. Communicate and think global
- VII. Face the future
- VIII. Technology should not dictate the norms
- IX. Cooperate with other disciplines
- X. Balance human rights carefully

The core principle of both the Recommendations and Commandments is that proper policy development is an informed and inclusive process. As Cradduck (2015) identifies, creating a legislative *internet access* right should be dealt with in three steps:

The **first step** is to recognize that the right of access to the internet is fundamental. . . . The **second step** is to develop appropriate policy/ies about what the right of access to the internet means and how these rights will be enabled, promoted and protected. . . . The **third step** is to implement this policy in legislation, which provides for penalties if any right is breached. (pp. 98–99) (emphasis added)

The ability to access internet content and services and then to effectively use that content and services is crucial for our collective future. It would be ludicrous, and unworkable, if your choice of supplier or the type of network you are able to connect through inhibited your ability to access electricity or water. It is equally so to continue to permit access to the internet to be similarly restricted. While not every expectation can be translated into legislation (Owens 2010), in the digital economy, it is suggested that it is incumbent on governments to legislate prescribing *internet access* as a right *per se* in order to ensure “access”-ability for all. As the UK House of Lords recognized, there is a need to “*define the internet as a utility service that is available for all to access and use*” (House of Lords 2015, p. 2 [43]). That need must be met now.

Conclusion

The internet is enmeshed in our daily lives. Suppliers collect our purchase details and email us with information regarding temptations targeted to our personal buying patterns. Our smart phones keep track of where we have been, and our televisions can talk back to us. That Sunday morning “chat” with your parents, once undertaken from the comfort of our bed, now requires us to get dressed and brush our hair before we log on. And governments and business are providing more and more essential, and potentially life-saving, information more easily and cheaply online than could be achieved physically. All this is great if you have “access”-ability, but if you do not, you are doomed to a life of being a second-class digital citizen, reliant on data and information being physically available or waiting your turn for access.

Access to the internet should be protected as a public right of all citizens, rather than a private (often restricted to a few) right. As seen in the USA, absent a specifically legislated and clearly articulated right of access, which is enforced by a regulator, many individuals remain disconnected. As the court observed in *Gil v Winn-Dixie*, “[t]here is no federal organization that mandates particulars of website accessibility” (p. 2) and while a turning point for that decision was that the website was inextricably linked to the physical stores of the defendant not all websites are so linked.

Despite the fact that a variety of human rights have general acceptance, only a few jurisdictions have enacted specific *internet access* rights and regimes. Notably several significant First World countries are among those jurisdictions *without* specific policies or laws. Commonly the right to *internet access* is unlegislated and, despite court decisions, unprotected. If this status quo is permitted to continue, then the most likely result is that the gap between the advantaged and the

disadvantaged will become an immutable chasm. *Internet access* by whatever means should be a certainty and not subject to the ripple effects arising from a change of government or regulator, or available only at the economic whim of suppliers.

As we move to the future, the “*baggage*” from the last century (US 2015, p. 13) should not constrain innovation, individuals, or the economy. Policy and resulting legislation should be developed with consideration to the position that the internet is another place, which may be accessed by a number of different routes, and that it is the fact of enabling access that is important. While for many the internet is easily accessible, for too many others, it is not, and therefore, without a legislated right of *internet access*, for many its borders will remain closed. This closure will have adverse effects both for individuals and countries.

How access is achieved will depend on a variety of factors; however, policy and legislation should not be written in such a way that the focus is on the means of achieving *internet access* as anything other than but one of the possible routes of reaching the internet’s content and services. Achieving a technology-neutral and access-method-neutral solution is essential as is the role of governments in enabling their citizens as well as protecting them (Gill et al. 2015). Ensuring *internet access* for all will come at a cost, but this is a cost that most would be willing to pay (Global Scan 2010).

Defining individual rights and then seeking international consensus of what rights should be recognized and protected is not an easy matter. Achieving consensus within any one country can be no less difficult than attempting this internationally. However, in respect of enabling *internet access*, regulators should look to “*exceed [their] national laws*” (Lodder 2013, p. 268) by giving consideration to the matters raised above and to the work being undertaken by those jurisdictions that have taken the lead in protecting and promoting their citizens’ rights. There are only two roads we can take as we progress to the future: the easy path where nothing is done specifically to progress or protect *internet access* or the more difficult path where we proactively work to achieve this goal. As with anything, the only merit to the easy path is that, well, it is easy – we really have no choice but to act appropriately now to enable “access”-ability into the future.

Cross-References

- [Convergence, Internet, and Net Neutrality Policy: What the Future Holds for the Internet and Online Content](#)
- [Critical Internet Studies](#)

References

- Blackman C and Srivastava L (eds.) (2011) *Telecommunications Regulation Handbook*, 10th edition. Washington, DC: The International Bank for Reconstruction and Development / The World Bank, InfoDev, and the International Telecommunications Union.

- Burke D, Clapper D, McRae D (2016) Accessible online instruction for students with disabilities: Federal imperatives and the challenge of compliance. *J Law Educ* 45(2):135–179
- Cerf V (2016) Preface. In: Belli L, De Filippi P (eds) *Net neutrality compendium: human rights, free competition and the future of the internet*. Springer International, Cham, pp v–vi
- Cradduck L (2015) Individuals, innovation, and the internet: why access is essential. *Common Ground*, Champaign
- Síndic de Greuges de Catalunya (2013) Broadband internet access as a universal service: digital equality. Report by The Catalan Ombudsman. <http://www.sindic.cat/site/unitFiles/3461/Broadband%20internet%20access%20as%20a%20univesal%20service%20complete.pdf>. Accessed 12 Aug 2014
- Department for Digital, Culture, Media and Sport ('DDCMS') (2017) A new broadband Universal Service Obligation: consultation on design. July 2017. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/634016/USO_consultation_document.pdf
- Department for Digital, Culture, Media and Sport ('DDCMS') (2017a) 'High Speed Broadband to become a legal right'. Press Release. 20 December 2017. <https://www.gov.uk/government/news/high-speed-broadband-to-become-a-legal-right> Accessed 18 July 2018.
- Dini P, Milne C, Milne R (2012) Costs and benefits for superfast broadband in the UK. Report, LSE Enterprise, May 2012. http://eprints.lse.ac.uk/43651/1/_libfile_REPOSITORY_Content_Dini,%20P_Costs-and-Benefits-of-Superfast-Broadband.pdf. Accessed 9 June 2015
- Dods D, Brisby P, Hubbard R et al (2010) Reform of European electronic communications law: a special briefing on the radical changes of 2009. *Comput Telecommun Law Rev* 16(4):102–112
- European Commission (2018) The digital economy and society index. <https://ec.europa.eu/digital-single-market/en/desi>. Accessed 18 July 2018
- Gill L, Redeker D and Gasser U (2015) Towards digital constitutionalism? Mapping attempts to craft an internet bill of rights. Berkman Klein Center for Internet & Society Research Publication 2015-15. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:28552582>. Accessed 21 Aug 2017
- Global Scan (2010) Four in five regard internet access as a fundamental right: global poll. Survey for the BBC World Service, 7 March 2010. http://www.globescan.com/news_archives/bbc2010_internet/BBC_Internet_Poll.pdf. Accessed 9 June 2015
- Gulatti G, Yates D (2012) Different paths to universal access: the impact of policy and regulation on broadband diffusion in the developed and developing worlds. *Telecommun Policy* 36: 749–761
- Guzman and Ors v Ministry of the Environment, Energy and Telecommunications, Office of the President, July 30, 2010 Supreme Court of the Supreme Court Costa Rica, [Constitutional Court] Res. N° 2010-012790 ('Guzman case')
- Harpur P (2013) From universal exclusion to universal equality: regulating ablesim in a digital age. *North Ky Law Rev* 40(3):529–565
- Helsper E (2008) Digital inclusion: an analysis of social disadvantage and the information society. Department for Communities and Local Government, London
- Herr R (2013) Can human rights law support access to communication technology? A case study under Article 10 of the right to receive information. *Inf Commun Technol Law* 22(1):1–13
- House of Commons (2016) Digital skills crisis. HC, vol 270, 13 June 2016. <https://publications.parliament.uk/pa/cm201617/cmselect/cmsctech/270/270.pdf> Accessed 18 Aug 2017
- House of Lords (2015) Make or break: The UK's digital future. House of lords select committee on digital skills, report of session 2014–15. HL Paper 111, 17 Feb 2015
- Humphry J (2014) The importance of circumstance: digital access and affordability for people experiencing homelessness [online]. *Aust J Telecommun Digit Econ* 2(3):55.1–55.15
- International Telecommunications Union ('ITU') (2012) Trends in telecommunication reform: smart regulation for a Broadband World. Report, May 2012
- Joergensen R, Marzouki M (2015) Reshaping the human rights legacy in the online environment. L'Observateur des Nations Unies, Association française pour les Nations Unies, Droits de l'homme 2.0: quelle protection à l'ère du numérique?, 38, pp 17–33. <http://afnuaix.free.fr./hal-01294731>

- Kaye D (2017) Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression. Human Rights Council. A/HRC/35/22
- Kruger L, Gilroy A (2016) Broadband internet access and the digital divide: Federal Assistance Programs. CRS report for congress RL30719. 28 Dec 2016
- Kummer M (2012) Oral statement by the internet society (ISOC). In: 19th session of the Human Rights Council, Panel discussion on the right to freedom of expression on the Internet (RES/18/18) 29 Feb 2012
- La Rue F (2011) Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression. Human Rights Council. A/66/290
- Land M (2013) Toward an international law of the internet. *Harv Int Law J* 54(2):393–458
- Liebert S, Condrey S, Goncharov D (2013) Public administration in post-communist countries: former Soviet Union, Central and Easter Europe, and Mongolia. CRC Press, Taylor & Francis Group, Boca Raton
- Lodder A (2013) Ten commandments of internet law revisited: basic principles for internet lawyers. *Inf Commun Technol Law* 22(3):264–276
- Lodder A (2017) Sovereignty is dead! Long live sovereignty! From nation-based to user central jurisdiction. *Amst Law Forum* 9(1):60–64
- Lucchi N (2016) Legal controversies in digital media. The impact of science and technology on the rights of the individual. Springer International, Cham
- Madureira R, De Oliveira Duarte A, Matias-Fonseca R (2012) The challenge of universal service in 21st century Portugal. *IEEE Technol Soc Mag* Fall 2012:27–33
- Martin B (2012) Hitting or missing African UAS objectives? An evaluation of universal access and service (UAS) policy guidelines for developing countries. *Digiworld Econ* 86(2):121–221
- McDonald L, Starasts A, Tiwari S et al (2016) Perceptions of older age and digital participation in rural Queensland. *Aust J Reg Stud* 22(2):263–284
- OECD (2011) OECD Council Recommendation on Principles for Internet Policy Making, 13 Nov 2011. Paris: OECD Publishing. <http://www.oecd.org/sti/ieconomy/49258588.pdf>. Accessed 14 May 2015
- OECD (2013) The internet economy on the rise – progress since the Seoul declaration. OECD Publishing, Paris. <https://doi.org/10.1787/9789264201545-en>. Accessed 4 June 2015
- OECD (2012) Universal Service Policies in the Context of National Broadband Plans. OECD Digital Economy Papers, No. 203. Paris: OECD Publishing <https://doi.org/10.1787/5k94gz19flq4-en> Accessed 20 July 2018
- Oozeer A (2014) Internet and social networks: freedom of expression in the digital age. *Commonw Law Bull* 40(2):341–360
- Owens M (2010) A Look at the Broad Strokes of Broadband: Internet Gaming and Internet Broadband Policy. *Gaming Law Review and Economics* 14(5):349–354
- Prasad R (2013) Universal service obligation in the age of broadband. *Inf Soc* 29(4):227–233
- Rauen C, Hirtuka C, Fracalanza P (2011) Universalization of telecommunications services: public policies in the OECD and in Brazil. *Int J Dev Issues* 10(2):108–122
- Reisdorf B, Dutton W, Triwibowo W et al (2017) The unexplored history of operationalising digital divides: a pilot study. *Internet Hist* 1(1–2):106–118
- Ryan M (2012) Telecommunications carriers and the “duty to serve”. *McGill Law J* 57(3):519–551
- Salahuddin M, Tisdell C, Burton L et al (2016) Does internet stimulate the accumulation of social capital? A macro-perspective from Australia. *Econ Anal Policy* 49:43–55
- Schejter A, Ben-Harush O, Tirosh N (2017) The effect of the transformation in digital media on the digital divide. In: Friedrichsen M, Kamalipour Y (eds) *Digital transformation in journalism and news media: media management, media convergence and globalization*. Springer International, Cham, pp 235–246
- Showell C (2017) Barriers to the use of personal health records by patients: a structured review. *PeerJ* 5:e3268. <https://doi.org/10.7717/peerj.3268>. Accessed 19 Aug 2017
- Snyder R (1996) The right to access: Jaquith v Waterloo Cable Commission. *Commun Law* 18:93–100

- Tiilikka P (2013) Access to information as a human right in the case law of the European court of human rights. *J Media Law* 5(1):79–103
- Tully S (2014) A human right to access the internet? Problems and prospects. *Hum Rights Law Rev* 14:175–195
- Turner N (2015) Statement to the hearing on protecting the internet and consumers through congressional action, Hearing before the United States House Committee on Energy and Commerce, Subcommittee on Communications and Technology, 21 Jan 2015
- United States (2015) Preliminary transcript – ‘hearing – protecting the internet and consumers through congressional action’ US House of Representatives, Subcommittee on Communications, and Technology, Committee on Energy and Commerce, 21 Jan 2015 <http://democrats.energycommerce.house.gov> Accessed 19 May 2015
- United Nations. 2010. *Millennium Development Goals: At a Glance*. Updated September, 2010. <http://www.un.org/en-mdg/summit2010/pdf/MDGs%20at%20a%20Glance%20SEPT%202010.pdf> Accessed July 20, 2018
- United Nations. 2013. *The Millennium Development Goals Report 2013*. <http://www.un.org/millenniumgoals/pdf/report-2013/mdg-report-2013-english.pdf> Accessed July 20, 2018
- United Nations. 2016. Oral Revisions of 30 June – Agenda item 3: Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development. A/HRC/32/L.20. 27 June 2016. https://www.article19.org/data/files/Internet_Statement_Adopted.pdf Accessed July 20, 2018
- Unwin T (2013) Ensuring that we create an internet for all. In Stockholm Internet Forum, Stockholm, Sweden, 23–23 May 2013
- Wang X (2013) Time to think about human right to the internet access: a Beitz’s approach. *J Polit Law* 6(3):67–77



Blended Data: Critiquing and Complementing Social Media Datasets, Big and Small

37

Sky Croeser and Tim Highfield

Contents

Why Blended Data?	672
From Big to Blended: Provocations and Responses	673
Big Data Changes the Definition of Knowledge	674
Claims to Objectivity and Accuracy Are Misleading	676
Bigger Data Are Not Always Better Data	678
Taken Out of Context, Big Data Loses Its Meaning	680
Just because It Is Accessible Does Not Make It Ethical	682
Limited Access to Big Data Creates New Digital Divides	685
Conclusion	686
References	687

Abstract

Internet research, and especially social media research, has benefited from concurrent factors, technological and analytical, that have enabled access to vast amounts of user data and content online. These trends have accompanied a prevalence of Big Data studies of online activity, as researchers gather datasets featuring millions of tweets, for instance – here, Big Data is a reference not solely to the size of datasets but to the wider practices and research cultures around large-scale and exhaustive (and often ongoing) capture of data from large groups, often (but not always) studied quantitatively (see Kitchin and Lauriaut 2014a; Crawford et al. 2014). However, the accessibility of “big social data” (Manovich

S. Croeser (✉)

Curtin University, Perth, WA, Australia
e-mail: s.croeser@curtin.edu.au

T. Highfield

University of Amsterdam, Amsterdam, North Holland, The Netherlands
e-mail: tim.highfield@gmail.com

2012) for Internet studies research is not without its limitations and challenges, and while extensive datasets enable valuable research, combining them with small data can provide more rounded perspectives and encourage us to think more about what we are studying. Similarly, privileging the online-only or the quantitative analysis of social media activity may overlook or mask key practices and relevant participants not present within the datasets. We argue for a blended data model as a critique and complement for different social media datasets, drawing in part on our research into social movements and activists' use (and non-use) of online technologies. Together, these approaches may overcome and negotiate the respective limits and challenges of social media data, both big and small.

Keywords

Social media · Big Data · Ethics · Methods · Social movements

Internet research, and especially social media research, has benefited from concurrent factors, technological and analytical, that have enabled access to vast amounts of user data and content online. Researchers can automate the collection of social media activity through application programming interfaces (APIs) on Twitter, Facebook, and Instagram and employ free tools and techniques for gathering and analyzing this data. These trends have accompanied a prevalence of Big Data studies of online activity, as researchers gather datasets featuring millions of tweets, for instance – here, Big Data is a reference not solely to the size of datasets but to the wider practices and research cultures around large-scale and exhaustive (and often ongoing) capture of data from large groups, often (but not always) studied quantitatively (see Kitchin and Lauriaut 2014a; Crawford et al. 2014). (As an aside, one question of “Big Data” is whether it should be capitalized or presented in inverted commas (or neither); the various studies we cite here do not provide a consistent take on this. For this chapter, we have referred to Big Data, following boyd and Crawford’s use of capitals to denote a set of practices (2012), with exceptions made for quotations and citations.) However, the accessibility of “big social data” (Manovich 2012) for Internet studies research is not without its limitations and challenges, and while extensive datasets enable valuable research, combining them with small data can provide more rounded perspectives and encourage us to think more about what we are studying – as also raised by André Brock (2015) in arguing for, and developing, methodologies for “deep data” analysis. Similarly, privileging the online-only or the quantitative analysis of social media activity may overlook or mask key practices and relevant participants not present within the datasets. We argue, then, for a blended data model as a critique and complement for different social media datasets, drawing in part on our research into social movements and activists’ use (and nonuse) of online technologies. Together, these approaches may overcome and negotiate the respective limits and challenges of social media data, both big and small. While

“small data” may share characteristics with Big Data but offer less exhaustive populations as the object of study and represent infrequent or one-off data collection processes (Kitchin and Lauriault 2014a), our reference to “small” data here is not intended to portray such datasets as less complex or rewarding than Big Data: rather, small data may be treated as “deeper data,” offering an opportunity to examine practices, uses (and nonuses), and other aspects of the data in detail – especially in combination with additional data sources and methods.

The critiques and approaches we outline here have been developed through our *Mapping Movements* research (Croeser and Highfield 2014, 2015a, b): this has encompassed fieldwork and social media analysis of social movements and events including Occupy Oakland, antifascist activism in Greece, and the 2013 World Social Forum in Tunisia. Our methodology brings together interviews and ethnographic approaches with digital methods, such as online issue mapping and social network analysis. In combining qualitative and quantitative approaches, for datasets which if not Big Data in themselves at least share characteristics with the large-scale study of social media activity, we reconcile the experiences of social movements as both physical and online manifestations. Using interviews and observations from the scene provides one perspective on a movement like Occupy, while its socially mediated online form may differ dramatically in terms of scope and participants – yet both elements are part of the same overall context. Our mixed methods utilize blended data as a means of addressing the limitations and gaps present in focusing on only one of these elements.

Our focus on social movements and their use of – and presentation through – online platforms raises questions about the value and limits of Big Data and about ethics in social media and social movement research. While some of these questions are perhaps more specific to controversial and sensitive contexts of activism and protest, they serve to demonstrate broader issues applicable to Internet research into diverse topics, including the everyday and banal online activity. It is also vital to remember that data which researchers may see as unimportant, or not particularly emotionally charged, may nevertheless be deeply personal to some social media users, precisely because of its quotidian nature. Lessons taken from the social movements’ context, including around ethics and analytical and data biases, are relevant to other social media datasets to varying degrees. Social movement research may be considered as an edge case, and in this chapter we use this context as a means of identifying and addressing methodological and analytical issues, questions, and limitations that are critical considerations for the field. As we developed this chapter, we found that many of our concerns mapped onto boyd and Crawford’s (2012) provocations around the use of Big Data methods: here, we attempt to further expand on their work and discuss some of the responses and reflections which emerged out of the *Mapping Movements* project that may be relevant to research drawing on Big Data approaches. We also note that this remains a work in progress: as we develop our research, new issues arise, and activists and other social media also raise new critiques about how academics, journalists, and others use social media “data.”

Why Blended Data?

Blended data approaches are a particular kind of mixed methods research, which is usually understood to draw on both quantitative and qualitative methodologies (Johnson et al. 2007). It is also useful to bear in mind Hesse-Biber and Johnson's broader definition of mixed methods as "research and inquiry that includes 'multiple and mixed' research projects that facilitate and reside at the intersections of multiple methods, purposes, kinds of data, and levels of analysis (e.g., micro, meso, macro), as well as a range of academic disciplines, paradigms, axiologies, stakeholders, and cultures of research and practice" (2013, p. 103). This definition suggests research which goes beyond simply drawing together different methods: it also involves building a dialogue around the limitations and benefits of different approaches, delving more deeply into the underlying assumptions underpinning these approaches, and being prepared to unsettle them. In our case, Tim's Internet studies setting developed via communication studies and French studies, and sky comes from a background in political science and international relations. This means not only different methodological training but also different forms of analysis, concerns, and even ethical frameworks around the purpose and possibilities of research.

Within our *Mapping Movements* research, "blended data" has not taken one specific form: while seeking to combine digital methods and fieldwork, our case studies have featured different foci in considering the physical and the digital. Our objects of research have varied, from Twitter to activist blogs and Web radio and different interviews and participant observation across the case studies thus far. There is no explicit formula to "blended data." Rather, there are multiple approaches researchers may follow to extend and develop their analysis of Internet-related practices and phenomena. Blended datasets might reflect online-only activity, bringing together data from different social media platforms (Driscoll and Thorson 2015; Burgess and Matamoros Fernández 2016) or mix documentary and archival research with social media, considering both the physically tangible and the tweeted, for instance. Here, the digital may have its analogues in, and demonstrate similar practices to, older media or physical phenomena, drawing parallels between social media and, variously, gazeteering, posterizing, pamphleteering, and diaries (Moe 2010; Humphreys et al. 2013). Drawing upon multiple data sources, of different types and contexts, can serve a complementary function.

The value of blended data within Internet research, and especially Big Data-driven studies, is in marking the limitations of Big Data while simultaneously addressing and complementing these aspects. boyd and Crawford (2012, p. 688) argue that:

Large data sets from Internet sources are often unreliable, prone to outages and losses, and these errors and gaps are magnified when multiple data sets are used together... A data set may have many millions of pieces of data, but this does not mean it is random or representative. To make statistical claims about a data set, we need to know where data is coming from; it is similarly important to know and account for the weaknesses in that data.

Addressing these challenges and limitations can be done *within* the data-gathering, but it can also be usefully done through blended data methods. These can serve to provide the context for online activity, to understand the motivations and decisions behind use and nonuse, and to include perspectives that are both important to the data yet not necessarily present within it. Blended data methods are one possible way of pursuing a “data-driven science” (in the broad sense of “science”) – combining abduction, deduction, and induction (Kitchin 2014). They can also encourage the cross-disciplinary discussions and collaborations which have been so fruitful in the development of Internet research as a field and which can lead to new paradigms, methods, and challenges.

From Big to Blended: Provocations and Responses

While Big Data as a concept has attracted extensive attention in Internet research and other fields, the scope of Big Data research can vary dramatically: what people are talking about when they talk about Big Data is not necessarily consistent. Indeed, we could ask how big the data has to be to qualify as Big Data. Mahrt and Scharkow (2013) note that Big Data has been used in part to refer to datasets that require specialist analytical processes that are too extensive for standard or commonplace software, for instance, and which within social media research may feature data points (such as tweets) numbering in the millions. However, the sheer volume of data is not the only factor that might contribute to a Big Data study – and indeed, size is not everything. Arguing that Big Data is perhaps a misnomer, boyd and Crawford (2012, p. 663) write that “Big Data is less about data that is big than it is about a capacity to search, aggregate, and cross-reference large data sets.”

Accompanying the rise of Big Data has “emerged a system of knowledge that is already changing the objects of knowledge, while also having the power to inform how we understand human networks and community” (boyd and Crawford 2012, p. 665). Rather than just being a descriptor for research involving large-scale and predominantly quantitative analysis of populations and their activities, Big Data now represents more than the objects of research. As Crawford et al. outline, Big Data can be variously considered as “theory, practice, archive, myth, and rhetorical move” (2014, p. 1665). We can conduct Big Data analyses of online activity (and other subjects) and follow principles of Big Data in how we frame and design our research – and indeed the wider Big Data context (not just within Internet studies) brings with it its own conventions, associations, hopes, and fears (see Puschmann and Burgess 2014).

What is clear is that Big Data refers not just to the datasets themselves – the role of researchers in constructing Big Data needs to be recognized. Vis (2013) underlines that Big Data does not describe a set, pre-existing object: “Things are up for grabs so to speak, before the emerging ideas about Big Data become codified and institutionalised. There is therefore an urgent imperative to question the mechanisms and assumptions around Big Data.” Similarly, the role of data providers in structuring what researchers can and cannot do, and what they are able to study, should not

be ignored – this refers to what is obtainable via APIs and the terms of service introduced by individual platforms (and the politics of these platforms; see Gillespie 2010; Langlois and Elmer 2013) and also to what researchers are technically capable of doing. At the same time, though, and as will be outlined below, there's a risk that the privileging of automated processes for capturing data from APIs (which might then be studied from Big Data-related approaches) overlooks and negates other means for data to be collected, provided, or interrogated (Vis 2013). While there is obvious value in long-term collection of data from populations of social media users, as a source for baseline analyses and providing context for smaller-scale analyses, the ways in which Internet research has responded to questions of Big Data and its common trends and approaches are not without their critiques or limits. Indeed, the data rush noted by Mahrt and Scharkow (2013) has not been evenly distributed across social media platforms or practices.

In response to the rise of Big Data studies, especially within Internet studies, danah boyd and Kate Crawford set out key provocations for Big Data research, arguing that “Big Data creates a radical shift in how we think about research” (2012, p. 665). In particular, their critiques address the impact of Big Data on the definition of knowledge; that claims to objectivity and accuracy are misleading; that bigger data are not always better data; that when taken out of context, Big Data loses its meaning; that just because it is accessible does not make it ethical; and that limited access to Big Data creates new digital divides. We use these critiques as foundation for our consideration of blended data, responding to the main challenges and questions raised by boyd and Crawford within an updated social media environment and the specific context of social movement research.

Big Data Changes the Definition of Knowledge

Big Data is not just about a quantitative shift in the volume of data analyzed: the first provocation that boyd and Crawford raise regarding Big Data relates to the ways in which it, as a system of practices, is “changing the objects of knowledge,” creating “a radical shift in how we think about research” (2012, p. 665). Zizi Papacharissi, in her reply to boyd and Crawford’s work, argues that we should draw on Sandra Harding’s discussion of situated knowledges to understand Big Data as shaped by a greater social reality that it also reproduces (Papacharissi 2015, p. 3). We might, then, query Big Data’s relationship with neoliberal capitalism (Qiu 2015, p. 4), the assumptions Big Data methods are based on, and the forms of analysis that they strengthen or undermine. Part of this involves remaining critical of “an arrogant undercurrent in many Big Data debates where other forms of analysis are too easily sidelined. Other methods for ascertaining why people do things, write things, or make things are lost in the sheer volume of numbers” (boyd and Crawford 2012, p. 666). Using blended data methods – or even carefully considering whether to use blended methods – offers a partial balance to this: it invites us to think more critically about which methods, and which kinds of data, are most appropriate for exploring a

particular set of questions, destabilizing claims that a particular set of methods are more “objective.”

Hesse-Biber and Johnson (2013, 2014) argue that combining different methods – and debating the best ways in which to combine methods – results in a turbulence which “provides the space for innovation and productive dialogue across our methods and paradigmatic standpoints. It is in the gaps between points of view where we may go after new knowledge(s) and newly emergent practices and designs. Such a turbulent environment asks each of us to be reflexive on our own researcher standpoint and be open to dialogue across our paradigmatic and methods comfort zones.” Blended methods can, and should, also lead to deeper challenges to how we think about research: “Can a researcher trained in qualitative methods with interpretative philosophy practice postpositivism? Can a postpositivist practice an interpretive method?” (Hesse-Biber and Johnson 2013, p. 105). These are not simply abstract questions: they have direct consequences for the ways in which we carry out our work and for the ways in which we understand our positions as researchers.

In our case, combining Big Data methods with participant observation and in-depth interviews raised questions about the relationship between “researchers” and “participants” that are rarely asked in Internet research which focuses purely on quantitative methods. For example, during fieldwork, it is common to try to make one’s presence as a researcher visible, at the same time as attempting not to disrupt events. This raised questions about how to shift the same practice online: how would we make it visible that we were collecting data around particular hashtags? What would we do if people using those hashtags challenged our data collection? These are ethical questions, and they are also questions which speak more deeply to the assumptions around how research works, what its purpose is, and what our roles are as researchers: considering these issues undermines assumptions around the subject/object dualism of much research and involves trying to build a different relationship between researchers and “participants” (or between researchers and “data”). Making data-gathering on spaces like Twitter visible opens researchers up to discussion and critique and hints at the possibility that they (or rather, *we*) may have to consider abandoning or significantly restructuring work on particular topics. Blended data methods also frequently require stepping away from one’s position as a “researcher” and into participation, which often builds emotional lived experiences and connections (Reger 2001). Attending meetings and protests, arguing with “participants” (or friends) late into the night about tactics, and sharing experiences of tension and threat give one a very different emotional relationship to your “data.”

Similarly, even for researchers not directly involved in fieldwork, there is a different sense of emotional involvement and connection when you’re not just collecting data on an event but rather collecting data with extended personal connections: this includes data specific to the fieldwork, such as a protest that your colleague (and, usually, friend) is attending, but also studies which are focused on a location with personal significance or writing about events, crises, and protests that other friends and colleagues have been affected by (apparent in such cases, for us personally, as the Boston Marathon bombing and London riots and natural disasters in Japan and Australia). In such examples, it is hard – or impossible – to become an

objective voice studying relevant data; yet this lack of (emotional) distance from this setting may also allow for further (or different) questions and depth to the analysis, based on personal interest and familiarity, than might result if coming to the subject without prior contextual knowledge.

Claims to Objectivity and Accuracy Are Misleading

Big Data methods are often seen as more objective than qualitative methods. Kitchin and Lauriault ([2014b](#), p. 4) argue that the pieces of information we have come to see as “data”:

are viewed as being benign, neutral, objective and non-ideological in essence, reflecting the world as it is subject to technical constraints ... the terms commonly used to detail how data are handled suggest benign technical processes: ‘collected’, ‘entered’, ‘compiled’, ‘stored’, ‘processed’ and ‘mined.’

boyd and Crawford ([2012](#), p. 667) note that this kind of analysis is often juxtaposed with a supposedly more subjective process of qualitative research: “there remains a mistaken belief that qualitative researchers are in the business of interpreting stories and quantitative researchers are in the business of producing facts.” However, this division between “fact-based science” and “subjective humanities” is one that has been challenged on a variety of fronts, including by researchers within science and technology studies and technoscience studies.

“Data,” including Big Data, is constructed through processes which are subjective and political. For example, Twitter’s Data Grants program ([Krikorian 2014](#)) simultaneously acknowledged and attempted to address the difficulty researchers face in using Twitter’s public, historic data to tackle “big questions” and allowed Twitter to manage access to their data. (Twitter’s Data Grants program ran once, in 2014: six projects were awarded grants, from 1300 submissions. At the time of revising this chapter in 2017, no repeat of the scheme had been announced.) “Data” might be the focus of research simply because it’s available, which shapes the questions that we can ask about it ([Vis 2013](#)), and it is essential to recognize and address the limits of these datasets (especially through additional methods) rather than just accept them as “this is what (and all that) we can do” or to just do what is easiest and quickest: as Mahrt and Sharkow note on the availability bias of Big Data studies, “Rather than theoretically defining units of analysis and measurement strategies, researchers tend to use whatever data is available and then try to provide an ex-post justification or even theorization for its use” ([2013](#), p. 25). Data is also co-produced through the tools available for data analysis, many of which are developed to meet commercial needs. And, of course, Big Data methods still require interpretation and framing: “We are on a mission to make a point about the data we made... we tell stories about the data and essentially they are the stories we wish to tell” ([Vis 2013](#)). The comparative ease of access for gathering and analyzing data from Twitter has not just contributed to this platform’s prominence within the existing literature, but the development of common methods and research designs has also led to extensive studies of similar topics. Elections and political communication on Twitter or the

live-tweeting of television shows, sporting contests, and breaking news are well-represented by research. While this has clear benefits in affording comparative research between different types of event, audience, and national context, it is also important to consider the practices and discussions not featured here, including the everyday and the banal which might not, for instance, employ common hashtags or keywords to denote relevant content.

This includes practices that subvert or circumvent standard approaches and affordances and that use different mechanisms for sharing content: while quoting tweets via textual means is obviously visible in (automated) textual analysis of Twitter data, posting screenshots of tweets to present them in image form creates different methodological and analytical concerns. Given the importance of visual documentation of comments to controversial and sensitive subjects, recording evidence of tweets before they are deleted within contexts where, for instance, sexist remarks and rape threats are prevalent (Rentschler 2014; Consalvo 2012), it is important not to overlook these elements. Vis (2013) argues that, rather than being a “discarded data object” because of their unsuitability for existing analytical processes, new methodological innovation is required to include the visual – and the mixed media – aspect of social media activity within research (see also Highfield and Leaver 2016). There are further practices which demonstrate active resistance and subversion of the norms and tropes of social media platforms and to avoid making explicit connections with specific users or topics (but where connections are implied through subtext), as outlined by Tufekci (2014), and using hashtags ironically or with deliberate misspellings or editorializing, to avoid the structural connection to wider, contested topics.

This is not to say that studying hashtags or networks of users is the wrong approach – there is a lot to be gained from this type of analysis, and of course we acknowledge that our own research has prominently featured these methods. Blended data offer one way to overcome various critiques and limits of Big Data – and online data-only – studies, to move beyond quick and easy analyses of social media data to explore context, motivation, and individual practices and behaviors within these settings. These methods have the potential to make resistant and subversive practices more visible. In our research, interviews, participant observation, and qualitative analysis of online practices highlighted a number of practices that might otherwise have remained hidden. These included the purposeful use of misdirection online as a response to ongoing surveillance and activists’ exploration of platforms such as Pinterest which were beyond the purview of our quantitative data-gathering. Our methods also exposed us to prompts to consider our own positions, as activists took the opportunity to ask us (and sky in particular) about our politics and our relationships with movements and academia. Blended methods – and the interactions with other academics and “participants” that they frequently expose us to – offer the potential to highlight and revisit the subjective, constructed nature of Big Data research; they open the range of potential questions we might ask of a set of data and invite us to consider more fully the ways in which we are making choices about the particular stories we are choosing to tell (or not to tell).

Bigger Data Are Not Always Better Data

Closely related to concerns about a false presentation of “objectivity,” there is a temptation to think that more data will be better data: that an analysis of thousands of tweets, posts, videos, or tags will yield more meaningful and objective results than a smaller sample or qualitative material. Sampling issues are particularly of concern here: as boyd and Crawford (2012, p. 668) note, “Just because Big Data presents us with large quantities of data does not mean that methodological issues are no longer relevant. Understanding sample, for example, is more important now than ever.” This is especially apparent when it comes to data drawn using automated processes through platform APIs or where visibility is partly determined by algorithms and/or choices which the researcher might not have been privy to (or conscious of making). Much Twitter research, for instance (our own included), uses the Streaming and Search APIs to locate relevant content based on hashtags, keywords, or other elements. However, these APIs are not providing *all* the relevant data: unless a researcher has access to Twitter’s full data stream – something which is financially beyond many researchers without institutional funding – then their results are only a sample of Twitter activity, which they have not actively determined (for a full comparison of API results and rate-limiting, see Morstatter et al. 2013; González-Bailón et al. 2014). This becomes a particular methodological caveat for analysis of large-scale and trending topics, for the more popular a subject (in terms of volume of tweets), the more posts will be missed from automated data capture.

Similarly, the impact of platform policies and algorithms on user activity as well as research should not be overlooked. While features like Twitter’s Trending Topics list or Facebook’s News Feed are key elements of the user experience of these platforms, the mechanics behind determining what counts as trending or which content to display is not known to the user or to researchers – and the algorithms change, as do other architectural and aesthetic aspects (Bucher 2012; Van Dijck and Poell 2013; Ananny and Crawford 2016; Duguay *forthcoming*). (Algorithmic decision-making and platform design has taken on increasing prominence following the 2016 US Presidential election, where the automated promotion of fake news on Facebook and questions of echo chambers, filter bubbles, manipulation of social media metrics and gaming algorithms, and algorithm-determined exposure to content and views took on popular and political dimensions (see Duguay *forthcoming*; for a full examination of media manipulation in the 2016 election, see Marwick and Caplan 2017). Questions about algorithms, surfacing, and visibility have long-standing relevance to many platforms and have been invoked in various controversies and problematic behaviors (see, e.g., Massanari 2017).) Tarleton Gillespie (2014) has described “calculated publics,” the result of user actions and decisions as determined by the algorithms of platforms: these processes may allow the identification of groups of users discussing a common topic, for example, yet as Gillespie notes “these algorithmically generated groups may overlap with, be an inexact approximation of, or have nothing whatsoever to do with the publics that the user sought out” (2014, p. 189). The publics presented by individuals and by algorithms are of course also shaped by practices, communities, and users whose

presentation, identity, and activities are influenced by external factors beyond the online setting (and which are realized and challenged in various ways on social media), including race, gender, sexuality, class, and religion (among others); these are not necessarily obvious or apparent within large-scale, surface-level analyses. (What are also critical to note here, though, are the assumptions and biases within the algorithmic, machine learning, and platform development processes, which lead to situations where digital media (intentionally or not) highlight structural inequalities around race or gender, for example (see Noble [forthcoming](#))).

The impact of algorithms and black box processes on social media research sampling is twofold: first, what data is returned in searches and automated captures is often determined by factors beyond the researcher and second, algorithms influence what individual users are seeing and responding to on these platforms – yet this information may be lost to researchers looking at isolated posts, statuses, or tweets after the fact. It may not simply be a case of noting how social media data are representative (or not) of a given population but also of highlighting the multiple factors influencing what data are being studied. In the same way that Baym ([2013](#)) highlights benefits and shortcomings of various social media metrics – including the question of audiences and intentionality for user activity – we reiterate here the need to acknowledge how data has been sampled and to not treat all samples as shaped by the same factors.

A blended data model can do more to show us the gaps in our research: it can tell us which methods are “better,” what we’re missing, and where we might need to complement the existing data. As Mahrt and Scharkow suggest, despite issues around sampling with large-scale social media datasets, “the collection of Big Data can also serve as a first step in a study, which can be followed by analyses of sub-samples on a much smaller scale” ([2013](#), p. 24). However, issues of sample selection do not disappear when using blended data. For example, social movement research often relies on a process of snowball sampling to gain contact with participants, which can lead to skewed demographics, and particularly to a focus on more accessible or visible participants (such as those who speak English or who are considered leaders within a movement). No single method is perfect, but blended data can both bring to light and partially address sampling biases.

Interviews and fieldwork carried out during *Mapping Movements* showed us gaps in our online data we might never have been aware of otherwise. In Oakland (Croeser and Highfield [2014](#)), participants emphasized the importance of organizers who were present on the ground but completely absent from Twitter (and therefore from our datasets). They also discussed strategic nonuse of Twitter and other platforms, as activists involved in Occupy tried to evade government surveillance. Similarly, our interviews in Greece (Croeser and Highfield [2015a](#)) showed that many activists modified their use of social media to avoid surveillance. They also eschewed the use of some online platforms because they were seen as out of alignment with activists’ goals. We also note that the use of blended methods helped to address an additional gap in our research in the case of the Greek research: interviews not only brought to light important omissions in the data we were collecting they also helped to fill the linguistic and cultural gaps in our work, with

participants translating ideas and concepts that we may otherwise have missed. For example, if we had only based our research on the online data available (and comprehensible) to us, we might not have understood the important distinction that many Greek anti-fascist activists make between the political left, autonomists, and anarchists. Finally, fieldwork during the 2013 World Social Forum provided a very different picture of the space of the forum than our online analysis did. While online analysis showed hashtagged commentary and contributions prominently featuring international organizations, movements, and independent media (including European Occupy sites and global justice groups), participant observation made it clear that the physical space was much more contested, with anarchist graffiti in particular spreading out across the days to reclaim the forum from more reformist perspectives. In each of these cases, limiting our research to Big Data methods would have left important gaps in our understanding.

While single-platform or hashtag-specific studies can be useful points of entry into studying the relationship between social movements and social media (or myriad other topics), since we completed our *Mapping Movements* fieldwork, there have been additional studies that combine multiple perspectives and sites of research to provide more rounded understandings of contemporary activism and digital media. The “Beyond the hashtags” report by Freelon et al. (2016) drew on “40.8 million tweets, over 100,000 web links, and 40 interviews of BLM activists and allies” in its analysis of the Black Lives Matter movement. Here, while Black Lives Matter is a key example of a movement making extensive use of social media, to study social media content alone severely limits what is available for analysis, even when that is a dataset of more than 40 million tweets. Social media-only research may also restrict what can or cannot be said, whether due to the technical limitations of platforms or the publicness of the particular spaces chosen. As with our research, adding participant interviews to the study allowed Freelon et al. “to better understand [activists’] thoughts about how social media was and was not useful in their work” (p. 10). Similarly, Zeynep Tufekci’s (2017) detailed examinations of protest and digital media draw on extended participant observation and interviews to offer insight into social movements and technology, from Egypt to Turkey to the USA.

Taken Out of Context, Big Data Loses Its Meaning

The caveats that accompany rich, big social datasets include acknowledging the loss of context and recognizing the artifice of the researcher’s context imposed upon the research object. Considering a dataset organized around a specific hashtag, for example, brings together diverse comments and users which otherwise might have nothing in common and no awareness of others featured in the same space. Context is determined by the presence of the chosen hashtag, yet the reasons and meanings behind the hashtag’s inclusion in a given tweet may be lost. For political subjects, this can mean losing important contextual information about an individual’s own views on a given issue, which might not be apparent in a single tweet but outlined in

their surrounding comments and supporting information. Identifying sarcasm, irony, and other ways of presenting views which might hide or obscure an individual's own views – when read in isolation – are further challenges here.

The many ways in which language can be used and adapted are particularly important to communication by different groups. Sharma, for instance, studied “Blacktags” – hashtags associated with Black Twitter that are “expressive of everyday racialized issues and concerns” (2013, p. 51) and make use of slang, humor, and other linguistic elements in their presentation; as part of their discussion, Sharma interrogates how such tags may become popular and widely shared (including receiving attention, positive or negative, from individuals and groups outside of those initially using the hashtag), as a result of connections between users and platform algorithms. The context of Black Twitter also raises important considerations about race, visibility, and researcher/analytical biases (among other questions), as noted by Brock (2015): while the marker of “Black Twitter” is used to describe social media practices and communities of, especially, Black Americans, the use of this descriptor is also been criticized for potentially ascribing a singular identity or practice to a diverse (and already marginalized) population (see also Brock 2012; McElroy 2015; Ramsey 2015). Furthermore, as Freelon et al. note within the context of Black Lives Matter, “‘Black Twitter’ is a widely-discussed cultural phenomenon that overlaps with BLM but remains distinct from it” (p. 8). They also underline that “Black Lives Matter” itself can also represent, variously, the wider movement, the specific organization, and the social media coverage and campaign of #BlackLivesMatter; these have crossover but are not entirely synonymous – yet the nuance here could be lost when taken out of context. In these cases, and many others, then, there is a risk of Big Data analysis imposing homogeneity on diverse practices, overlooking individuals’ intentions and contexts for their remarks. Decontextualizing social media data can also remove external and personal motivations behind comments, masking the political, social, cultural, temporal, and other factors which may lead an individual to tweet or post a particular remark.

Furthermore, there are diverse practices and interests apparent within datasets and discussions organized around a particular subject: single hashtag studies, for instance, use a specific marker to identify relevant content, but this does not mean that all comments featuring the hashtag are covering the same topic. In our analysis of Twitter around the Occupy Oakland movement, the #oo hashtag was used for multiple purposes and co-occurred with other hashtags denoting, variously, specific protests, other branches of the Occupy movement, meetings, and local authorities and events. Not all users tweeting about #oo used these other hashtags, though: the risk of homogeneity is apparent here, as for some users Occupy Oakland was actually a peripheral topic – since they were not in Oakland or discussing that branch specifically – while others were directly discussing it. Similarly, Burgess et al. (2015) describe the hashtag as a “hybrid forum,” where diverse coverage and practices are apparent within an ostensibly overarching, common context. This diversity, though, is revealed and interrogated more fully through a blended methods approach than purely quantitative processes and backed up with further blended data by combining social media analysis with, for instance, interviews and surveys of participants. Of

course, not all Big Data analysis is quantitative – and not all quantitative research features Big Data – and we are not saying that focusing on Big Data is wrong: by definition, this research offers huge potential because of the richness and scope of its datasets, providing extensive resources to research. Similarly, while the wealth of Twitter research provides rich detail into particular contexts and practices on this platform, Twitter is not a representative of “social media” or “online communication” overall. There are many options available here and no one solution or template for analysis.

A secondary form of blended data is suggested here, then: studying different platforms and apps, beyond the major, general spaces like Twitter and Facebook, and especially a focus on platform use in concert. Users employ different platforms for different purposes, communicating with networks of friends and followers that may overlap considerably but are not entirely the same, and information and content spread between platforms. To investigate this extended coverage and activity, Driscoll and Thorson (2015) outline approaches to identifying and analyzing topical content across platforms, based on links made to common content and thematic overlap in tweets and posts on Twitter, Facebook, and more, among other potential means of exploring social media activity beyond the single platform context. The issue mapping of sociocultural controversies by Burgess and Matamoros Fernández (2016), too, extends existing methodologies to undertake cross-platform tracking of topics and identify cultural dynamics at play within, but also across, popular platforms. By following particular media objects, actors, or themes across digital media, these approaches allow for greater awareness of the different cultures and practices on particular platforms and the involvement of the platforms themselves in shaping activity and discussion (see also Matamoros Fernández 2017).

The risks of loss of meaning and context in big social datasets also extend to the various groups and communities – and isolated individuals – contributing around a given topic or event. This is not just apparent online, of course: within the *Mapping Movements* context and the study of activists and social justice, “social movements are inherently multifaceted, fluid, and messy” (Croeser 2015, p. 77), drawing together diverse themes, groups, and perspectives. Implying singular topical relevance or adherence within a big dataset ignores this messiness. Blended data provides further context to the analysis: it does not provide *all* the contexts but at least addresses some of the imbalances apparent here.

Just because It Is Accessible Does Not Make It Ethical

Gathering social media data comes with a number of ethical challenges. Ethical issues with gathering social media data are often addressed in the context of highly politicized and risky topics, such as participation in social movements. Big Data methodology can alleviate some of the concerns associated with using such data by, for example, de-identifying content, although, as we note elsewhere at greater length (Croeser and Highfield 2015b), ethical challenges remain in these cases. However, even collecting data on more quotidian topics can be ethically problematic. As Mahrt

and Scharkow note, “basically all Big Data research is based on the assumption that users implicitly consent to the collection and analysis of their data by posting them online” (2013, p. 26), which is not an assumption we should take for granted. Rather than simply accepting the ways in which social media companies are resetting the boundaries of privacy to push the “radical transparency” that their business model relies on (Raynes-Goldie 2012; Hoffman 2014), researchers need to think carefully about what it means to turn people’s posts about their lives, or their everyday and mundane conversations, into “data.” Vis (2013) notes the links between the “synoptic view” of users that Big Data researchers, social media companies, and those developing data-collecting tools adopt in the production of “data.” Similarly, Anita Chan argues in her response to boyd and Crawford’s work that we need to be particularly alert to the dangers of collaborations between academics and corporations offering access to private data pools and to the ways in which this might encourage a view of users “less as physical, embodied ‘subjects’ with rights and obligations for protections, than as data opportunities for experimental extractions” (Chan 2015, pp. 3–4). It is useful to take this as a prompt to explore some of the deeper ethical issues involved in the use of Big Data methods on social media.

One of the first concerns related to the ethics of online research concerns the kinds of data it is ethical to access. As Dorothy Kim (2014) argues, academics (and in particular white academics) have often assumed that anything shared on Twitter – and other online spaces – is public, ignoring the “the contextual and historical background [necessary] to understand the long history of minorities and especially black men and women being used as data and experimental bodies for research and scientific experiments.” Activists have criticized the appropriation of data, content, and analysis shared on social media. For example, Sydette Harry (2014) talks about the urgent need for a better understanding of the ways in which marginalized groups, and Black women in particular, have been subject to data-gathering which becomes a weapon and which they cannot direct – or even participate in – themselves. In a case that highlights some of the failures of academia to properly address these issues, Lauren Chief Elk criticized the unattributed use of data developed by the Save Wiy়াbi project in a funded student project and the lack of an appropriate response by the California College of the Arts (Steinhauer 2014; Chief Elk 2014). Even as we write this, we are aware that there is a danger that in drawing on work by activists discussing the appropriation of their analysis, we are repeating the same dynamic. We have attempted to address this by foregrounding and properly attributing the activists and academics who have led the conversation around the appropriation of their data while avoiding informal communications that seem intended for a more limited audience.

Kim and Kim’s (2014) #TwitterEthics Manifesto, developed through a broader conversation on Twitter, sets the minimum for Twitter research at “credit, citation, attribution” but say that additionally academics “should ask each individual user on Twitter for consent. They should explain the context and the usage of their tweets.” This is clearly impractical for most Big Data research on Twitter and other platforms. There are, however, some ways in which researchers can, at the least, make their data-gathering more visible, including by tweeting with the relevant hashtag (or in

some other way reaching out to the community they're gathering data from). This not only gives users the opportunity to avoid using a particular hashtag or taking part in the community which is the subject of data-gathering, it also opens the possibility of dialogue and of critique. This may be uncomfortable at times for researchers: this kind of discomfort can be productive in rethinking the ways in which academia is structured and the relationship between researchers and those whose data they draw on. In addition, some of Kim and Kim's other recommendations around building dialogue, recognizing the role of activists (as well as, or sometimes rather than) academics as experts, and seeking to build more radical research models may be applicable (Kim and Kim 2014). Many of these mesh well with research approaches that attempt to challenge existing power structures within academic research, including social movement research which positions activists as experts (Chesters 2012); critical, indigenous, and anti-oppressive approaches to research (Brown and Strega 2005); and intersectional approaches (Collins 1989; Cho et al. 2013; hooks 2000). Integrating these approaches into Big Data methodology can be further strengthened by drawing on blended methods.

Blended methods offer opportunities to further deepen our engagement with the ethical challenges of Big Data research. They are a potential means for addressing questions of ethics more generally within Internet research, including platform ethics (what is allowed on and by individual platforms, from Twitter to Facebook to Instagram to Tumblr) and the blurring of personal, private, and public across multiple levels of "publicness" (see Highfield and Leaver 2015). Such considerations should take into account the information volunteered by social media users both deliberately and inadvertently – the presentation not just of automatically generated geolocation and other metadata, for instance, but also the tagging and visibility of other people in posts and photos or the other potentially revealing elements depicted in images. As part of this, the use and nonuse of social media, and subversive and unorthodox practices, can be identified and examined through blended data approaches. Within our *Mapping Movements* research, interviews have in part examined why activists might not use particular platforms, including for reasons of surveillance – information not necessarily available from a Big Data-only analysis. Awareness of these processes, which are clearly attempts to protect certain data from particular audiences, needs to be taken into account when considering which data researchers gather and what we publish.

Reflections on the ethics of Big Data research, and on the ways in which different research methods might lead to more engagement with participants (including the possibility that participants will raise critiques of researchers' methods or analysis), must extend beyond institutional ethics processes. As boyd and Crawford (2012, p. 672) note, many ethics boards are not fully aware of the details of Big Data methodology or of the potential ramifications of Big Data. Internet research, and academia more generally, should also learn from important conversations being held among social media users about the ways in which privilege and surveillance structure the (in)visibility of different contents across platforms. This requires actively seeking out, listening to, and attributing the analysis of marginalized groups, including trans people, people of color, disabled people (We recognize this is a

contentious term, and while we draw on disabled people's such as Stella Young's (2012) understanding of their disability as socially constructed, we recognize that some people may be uncomfortable with or reject this model.), and women.

Limited Access to Big Data Creates New Digital Divides

Questions of access to data and tools, and understanding of Big Data analysis, are not purely methodological: they are also political. As Kitchin and Lauriault note, "Databases and repositories are expressions of knowledge/power, shaping what questions can be asked, how they are asked, how they are answered, how the answers are deployed, and who can ask them" (2014b, pp. 4–5). The recent turn toward Big Data has implications not just for the kinds of research that we do but also for power structures within academia. Big Data methods – and the current enthusiasm for these methods – among other effects, exclude or discourage some groups from participation in research processes, open spaces for others who might previously not have been involved in Internet studies, and shift funding distribution.

The politics of social media platforms (see also Gillespie 2010) contribute to such a divide among researchers: access to large-scale data from Twitter, Instagram, or Facebook, for instance, is limited either by what is and is not permitted through the platforms' APIs or by researchers' funding to use data on sellers like Gnip. For many individual researchers, including postgraduate students, fractional and sessional staff, and adjuncts, such a financial outlay may well be unrealistic, especially for the longer-term study of users and practices beyond snapshots. Furthermore, the terms of use for Twitter which explicitly prevent the sharing of datasets mean that not only are researchers without formal affiliations and collaborations unable to use resources that might be gathered by colleagues but that replicating and reviewing datasets and analyses are also unlikely. As Vis (2013) notes, this impacts upon the validity of research: issues "arise in relation to the often opaque and unclear ways in which researchers themselves make and collect data for research purposes" and without a clear way for studies to reproduce datasets and replicate analyses.

Many researchers are aware of these issues; the interviews carried out by Weller and Kinder-Kurlanda (2015) highlight various concerns and inconsistencies around doing social media research, including questions of sharing data and independent testing of analyses. Similarly, Zimmer and Proferes (2014) have noted recurring questions around ethical research in this field and the inconsistent approaches to addressing such concerns within different studies and institutional contexts (from the collection of public or semipublic data to the presentation of information within published research). While these divides may appear neutral – all research is affected by platform policies, for instance – they are exacerbated by the structural inequalities within and outside of academia: this includes the varying support and resources available to permanent and fractional staff and the impact of precarity noted above but also reflects other gaps and divisions that may be widened by the privileging of particular types of research (and the potential to more quickly publish Big Data

studies than those relying on interviews, fieldwork, surveys, focus groups, or other sources and methods beyond the online-only and the automated).

Given the continued underrepresentation of women, people of color, and other marginalized groups in science, technology, engineering, and math, it's also worthwhile considering the ways in which an uncritical valorization of Big Data approaches might widen gaps within academia. boyd and Crawford (2012, p. 674) note that women are underrepresented in computational research, which affects the kinds of questions posed and topics studied. There are echoes here, with our own experiences: sky began her tertiary education studying science and engineering and was put off by a multitude of barriers, including orientation events which were unsafe, creepy male tutors, and a lack of signals to counter imposter syndrome (these were also balanced by the ways in which being a white, middle-class cis woman offered forms of privilege).

If funding and attention shifts to Big Data approaches – and consequently away from researchers using other methodologies (a possibility that Sawyer noted on the horizon in 2008 and which Chan (2015, p. 2) notes has precedents in other areas) – which perspectives might this (further) marginalize? What might it mean for those who already find it hard to find a voice within academia, for those who cannot easily access the necessary tools or training for Big Data research, or for those who find their critiques of Big Data analysis undermined by assumptions that they are too “subjective”? The possibility that an enthusiasm for Big Data methodology might increase existing inequalities within (and beyond) academia does not necessitate abandoning these tools, but it does require deep critical reflection.

Conclusion

Our response to boyd and Crawford (2012), and to questions of Big Data in general, is intended to highlight the limits to Big Data analyses while recognizing the opportunities that they afford. We have outlined a way that we have attempted to combine various approaches to social media analysis through blended data, as a means to negate and overcome some of these concerns. However, this is not the only possible solution: our approach focuses on social movements in addressing the limits and pitfalls of social media research, including ethical considerations, focusing on social movements. Other contexts might warrant other approaches, such as the deeper data analyses suggested by Brock (2015), yet a blended model in general is one that may prove beneficial to researchers and their subjects.

In suggesting this model, though, we are not arguing that big/small data are the problem, that all Big Data research is reductive or misguided, or that looking solely at small data will suddenly remedy all problems. What is needed is *good* data, in whatever form, supported by methodologies and analyses that are robust, flexible, and complementary. The datasets featured in studies, however large, are not the research or its findings: researchers have a responsibility to ask *good* questions of their data, of what it depicts and what it does not, and of the contexts, motivations, and cultures apparent within them.

Using blended data does not, of course, completely address the many provocations raised around Big Data. Our research is open to many of the same concerns that boyd and Crawford highlight, including a positioning of some knowledge as more objective, gaps and elisions in our analysis, and an uneasy ethical relationship with “participants” and “data.” In many senses, these problems are inherent in humanities research, particularly given the structural inequalities which underlie academia (and its broader social and political context). The questions and concerns raised and responded to here around Big Data analysis, and around Internet studies more generally, are not just questions of these contexts; in responding to the provocations by boyd and Crawford, then, and promoting blended and deeper analyses that take into account other perspectives, practices, and contexts, we are also attempting to improve research cultures and capabilities. There is no one right way of doing this, and not all approaches will be relevant or appropriate for all settings. However, being aware of these concerns and consciously attempting to address them, collectively and collaboratively promoting different methods, is a step toward doing research that is inclusive, accessible, open, and supportive, rather than what might just provide quick results or fit a currently trending paradigm.

References

- Ananny M, Crawford K (2016) Seeing without knowing: limitations of the transparency ideal and its application to algorithmic accountability. *New Media Soc.* <https://doi.org/10.1177/1461444816676645>
- Baym NK (2013) Data not seen: the uses and shortcomings of social media metrics. *First Monday* 18(10). Retrieved from <http://firstmonday.org/ojs/index.php/fm/article/view/4873/3752>
- boyd d, Crawford K (2012) Critical questions for Big Data. *Info Comm Soc* 15(5):662–679. <https://doi.org/10.1080/1369118X.2012.678878>
- Brock A (2012) From the blackhand side: Twitter as a cultural conversation. *J Broadcast Electron Media* 56(4):529–549. <https://doi.org/10.1080/08838151.2012.732147>
- Brock A (2015) Deeper data: a response to Boyd and Crawford. *Media. Culture Society* 37 (7):1084–1088
- Brown LA, Strega S (2005) Research as resistance critical, indigenous and anti-oppressive approaches. Canadian Scholars’ Press, Toronto. Retrieved from <http://site.ebrary.com/id/10191692>
- Bucher T (2012) Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media Soc* 14(7):1164–1180
- Burgess J, Galloway A, Sauter T (2015) Hashtag as hybrid forum: the case of #agchatoz. In: Rambukkana N (ed) Hashtag publics. Peter Lang, New York, NY, pp 61–76
- Burgess J, Matamoros Fernández A (2016) Mapping sociocultural controversies across digital media platforms: one week of #gamergate on Twitter, YouTube, and Tumblr. *Comm Res Pract* 2(1):79–96
- Chan A (2015) Big data interfaces and the problem of inclusion. *Media Cult Soc* 0163443715594106. <https://doi.org/10.1177/0163443715594106>
- Chesters G (2012) Social movements and the ethics of knowledge production. *Soc Mov Stud* 11 (2):145–160. <https://doi.org/10.1080/14742837.2012.664894>
- Chief Elk L (2014) Teach-In Summer Fundraiser. YouCaring. Retrieved 3 June 2015, from <http://www.youcaring.com/nonprofits/teach-in-summer-fundraiser/212206>

- Cho S, Crenshaw KW, McCall L (2013) Toward a field of intersectionality studies: theory, applications, and praxis. *Signs* 38(4):785–810. <https://doi.org/10.1086/669608>
- Collins PH (1989) The social construction of black feminist thought. *Signs* 14(4):745–773
- Consalvo M (2012) Confronting toxic gamer culture: a challenge for feminist game studies scholars. *J Gender New Media Technol* 1. Retrieved from <http://adanewmedia.org/2012/11/issue1-consalvo/>
- Crawford K, Miltner K, Gray ML (2014) Critiquing Big Data: politics, ethics, epistemology. *Int J Comm* 8:1663–1672
- Croeser S (2015) Global justice and the politics of information: the struggle over knowledge. Routledge, Hoboken, NJ
- Croeser S, Highfield T (2014) Occupy Oakland and #oo: uses of Twitter within the occupy movement. *First Monday* 19(3). <https://doi.org/10.5210/fm.v19i3.4827>
- Croeser S, Highfield T (2015a) Harbouring dissent: Greek independent and social media and the antifascist movement. *Fibre Culture* 26:136–157
- Croeser S, Highfield T (2015b) Mapping movements - social movement research and Big Data: critiques and alternatives. In: Langlois G, Redden J, Elmer G (eds) *Compromised data: from social media to Big Data*. Bloomsbury, pp 173–201
- Driscoll K, Thorson K (2015) Searching and clustering methodologies: connecting political communication content across platforms. *Ann Am Acad Pol Soc Sci* 659(1):134–148. <https://doi.org/10.1177/0002716215570570>
- Duguay S (forthcoming) Social media's breaking news: the logic of automation in Facebook trending topics and twitter moments
- Freelon D, McIlwain CD, Clark MD (2016) Beyond the hashtags: #Ferguson, #Blacklivesmatter, and the online struggle for offline justice. Centre for Social Media & Social Impact, Washington, DC. http://cmsimpact.org/wp-content/uploads/2016/03/beyond_the_hashtags_2016.pdf
- Gillespie T (2010) The politics of “platforms”. *New Media Soc* 12(3):347–364
- Gillespie T (2014) The relevance of algorithms. In: Gillespie T, Boczkowski PJ, Foot KA (eds) *Media technologies: essays on communication, materiality, and society*. The MIT Press, Cambridge, MA, pp 167–194
- González-Bailón S, Wang N, Rivero A, Borge-Holthoefer J, Moreno Y (2014) Assessing the bias in samples of large online networks. *Soc Networks* 38:16–27. <https://doi.org/10.1016/j.socnet.2014.01.004>
- Harry S (2014, October 6) Everyone Watches, Nobody Sees: How Black Women Disrupt Surveillance Theory. Model View Culture. Retrieved from <https://modelviewculture.com/pieces/every-one-watches-nobody-sees-how-black-women-disrupt-surveillance-theory>
- Hesse-Biber S, Johnson RB (2013) Coming at things differently: future directions of possible engagement with mixed methods research. *J Mixed Methods Res* 7(2):103–109. <https://doi.org/10.1177/1558689813483987>
- Highfield T, Leaver T (2015) A methodology for mapping Instagram hashtags. *First Monday* (1):20
- Highfield T, Leaver T (2016) Instagrammatics and digital methods: studying visual social media, from selfies and GIFs to memes and emoji. *Comm Res Pract* 2(1):47–62
- Hoffman AL (2014, June 30) Reckoning with a decade of breaking things. Model View Culture. Retrieved from <https://modelviewculture.com/pieces/reckoning-with-a-decade-of-breaking-things>
- hooks b (2000) Feminist theory: from margin to Center. Pluto Press, London
- Humphreys L, Gill P, Krishnamurthy B, Newbury E (2013) Historicizing new media: a content analysis of twitter. *J Commun* 63(3):413–431
- Johnson RB, Onwuegbuzie AJ, Turner LA (2007) Toward a definition of mixed methods research. *Journal of Mixed Methods Research* 1(2):112–133. <https://doi.org/10.1177/1558689806298224>
- Kim D (2014, October 7) Social media and academic surveillance: the ethics of digital bodies. Model View Culture. Retrieved from <http://modelviewculture.com/pieces/social-media-and-academic-surveillance-the-ethics-of-digital-bodies>
- Kitchin R (2014) Big Data, new epistemologies and paradigm shifts. *Big Data Soc* 1 (1):2053951714528481. <https://doi.org/10.1177/2053951714528481>

- Kitchin R, Lauriault TP (2014a) Small Data, Data Infrastructures and Big Data (SSRN Scholarly Paper No. ID 2376148). Rochester, NY: Social Science Research Network. Retrieved from <http://papers.ssrn.com/abstract=2376148>
- Kitchin R, Lauriault TP (2014b) Towards critical data studies: charting and unpacking data assemblages and their work (SSRN Scholarly Paper No. ID 2474112). Rochester, NY: Social Science Research Network. Retrieved from <http://papers.ssrn.com/abstract=2474112>
- Kim D, Kim E (2014, April 7) The #TwitterEthics manifesto. Model View Culture. Retrieved from <https://modelviewculture.com/pieces/the-twitterethics-manifesto>
- Krikorian R (2014) Introducing Twitter Data Grants. Retrieved 4 Aug 2015, from <https://blog.twitter.com/2014/introducing-twitter-data-grants>
- Langlois G, Elmer G (2013) The research politics of social media platforms. Culture machine (14)
- Mahrt M, Scharkow M (2013) The value of Big Data in digital media research. J Broadcast Electron Media 57(1):20–33. <https://doi.org/10.1080/08838151.2012.761700>
- Manovich L (2012) Trending: the promises and the challenges of Big Social Data. In: Gold MK (ed) Debates in the digital humanities. University of Minnesota Press, Minneapolis, pp 460–475
- Marwick A, Caplan R (2017) Media manipulation and disinformation online. Data Soc, New York City. https://datasociety.net/pubs/oh/DataAndSociety_MediaManipulationAndDisinformationOnline.pdf
- Massanari A (2017) #Gamergate and the Fappening: how Reddit's algorithm, governance, and culture support toxic technocultures. New Media Soc 19(3):329–346
- Matamoros Fernández A (2017) Platformed racism: the mediation and circulation of an Australian race-based controversy on Twitter, Facebook and YouTube. Info Comm Soc 20(6):930–946
- McElroy K (2015) Gold medals, black twitter, and not-so-good hair: framing the gabby Douglas controversy. ISOJ 1(1). Retrieved from <https://isojjournal.wordpress.com/2015/04/15/gold-medals-black-twitter-and-not-so-good-hair-framing-the-gabby-douglas-controversy/>
- Moe H (2010) Everyone a pamphleteer? Reconsidering comparisons of mediated public participation in the print age and the digital era. Media Cult Soc 32(4):691–700
- Morstatter F, Pfeffer J, Liu H, Carley KM (2013) Is the sample good enough? Comparing data from Twitter's Streaming API with Twitter's Firehose. In: Proceedings of the 7th International AAAI Conference on Weblogs and Social Media, pp 400–408
- Noble SU (forthcoming) Algorithms of oppression: how search engines reinforce racism. NYU Press, New York City
- Papacharissi Z (2015) The unbearable lightness of information and the impossible gravitas of knowledge: Big Data and the makings of a digital orality. Media Cult Soc 0163443715594103. <https://doi.org/10.1177/0163443715594103>
- Puschmann C, Burgess J (2014) Metaphors of Big Data. Int J Comm 8:1690–1709
- Qiu JL (2015) Reflections on Big Data: “just because it is accessible does not make it ethical”. Media Cult Soc 0163443715594104. <https://doi.org/10.1177/0163443715594104>
- Ramsey DX (2015, April 10) The truth about Black Twitter. The Atlantic. <http://www.theatlantic.com/technology/archive/2015/04/the-truth-about-black-twitter/390120/>
- Raynes-Goldie K (2012) Privacy in the age of facebook : discourse, architecture, consequences. Curtin Universitye. Retrieved from http://espace.library.curtin.edu.au/R?func=dbin-jump-full&local_base=gen01-era02&object_id=187731
- Reger J (2001) Emotions, objectivity and voice: an analysis of a “failed” participant observation. Women's Stud Int Forum 24(5):605–616. [https://doi.org/10.1016/S0277-5395\(01\)00190-X](https://doi.org/10.1016/S0277-5395(01)00190-X)
- Rentschler CA (2014) Rape culture and the feminist politics of social media. Girlhood Studies 7 (1):65–82. <https://doi.org/10.3167/ghs.2014.070106>
- Sawyer S (2008) Data wealth, data poverty, science and cyberinfrastructure. Prometheus 26 (4):355–371. <https://doi.org/10.1080/08109020802459348>
- Steinhauer J (2014, July 28) Native activist charges art students with plagiarism. Hyperallergic. Retrieved 3 June 2015, from <http://hyperallergic.com/139769/native-activist-charges-art-students-with-plagiarism/>
- Tufekci Z (2014) Big Questions for social media Big Data: Representativeness, validity and other methodological pitfalls. In: ICWSM '14: Proceedings of the 8th International AAAI Conference on Weblogs and Social Media. Ann Arbor

- Tufekci Z (2017) Twitter and tear gas: the power and fragility of networked protest. Yale University Press, New Haven, US
- van Dijck J, Poell T (2013) Understanding social media logic. *Media Comm* 1(1):2–14
- Vis F (2013) A critical reflection on Big Data: considering APIs, researchers and tools as data makers. *First Monday* 18(10). Retrieved from <http://firstmonday.org/ojs/index.php/fm/article/view/4878>
- Weller K, Kinder-Kurlanda KE (2015) Uncovering the challenges in collection, sharing and documentation: The hidden data of social media research? Ninth International AAAI Conference on Web and Social Media
- Young S (2012) I identify as a disabled person. Retrieved 27 Aug 2015, from <http://www.mamamia.com.au/news/stella-young-i-identify-as-a-disabled-person/>
- Zimmer M, Proferes N (2014) A topology of Twitter research: disciplines, methods, and ethics. *Aslib J Manag* 66(3):250–261



Quinn DuPont

Contents

Encryption	694
Obfuscation and Hiding	696
Code	698
Language	701
Epistemology	702
References	703

Abstract

Cryptographic technologies have become an essential and even ubiquitous component of online infrastructure, yet they are rarely acknowledged outside of technical literatures. This chapter contributes questions about the impact of these technologies on daily life, and suggests five threads for future analysis: encryption, obfuscation and hiding, code, language, and epistemology. While each has a technical side, in this chapter they are presented at the intersections with society, politics, and culture. In many cases, revitalizing these intersections requires looking for historical examples, when for instance, prior to the twentieth century, the technologies and our understanding of them were more fluid and integrated with cultural and scientific pursuits. The common dimension running through this history and its revitalization is a conception of cryptography and its cognate technologies as “media.”

Keywords

Cryptography · Code · Encryption · Media theory · Internet infrastructure · Digital culture

Q. DuPont (✉)

Information School, University of Washington, Seattle, WA, USA

e-mail: qdupont@uw.edu

By most measures, we have entered an online world of ubiquitous cryptographic media. Although it is rarely acknowledged, the tide began to turn in the late 2000s (continuing the “crypto wars” of the early 1990s), when websites like Facebook and Google enabled fully secure web browsing – encrypting all data transfers, not just password exchanges, as had been typical previously. Other websites soon joined (Yahoo!, YouTube, Wikipedia, and so on), sometimes encrypting transmission *by default*, without explicit user knowledge or consent. Around the same time, many other Internet services begun using cryptography for data transmission and storage, and end-to-end encryption soon became the gold standard. BitTorrent was at this time a major driver of encrypted Internet traffic, and novel applications of cryptography (such as Bitcoin) soon joined the ranks, born out of the same sociopolitical milieu. In 2013, immediately following Edward Snowden’s disclosures of mass surveillance and global signals intelligence by state actors, the rate of deployment of cryptographic technologies skyrocketed. Contrary to popular belief, Snowden’s disclosures demonstrated that properly implemented cryptography *is* effective against the best surveillance and cryptanalysis techniques (with important caveats). Driven by privacy fears, consumer demand, and supply-side ease of implementation (commercial and free off-the-shelf products became widely available, such as Let’s Encrypt), rates of encrypted Internet traffic increased by double-digit percentages in the intervening years. 2016, for example, was a banner year: the largest increase in encryption use over the last 11 years (Korolov 2016), with over half of all web browsing encrypted and secure (Gebhart 2017) and with predictions that 70–75% of global Internet traffic will be encrypted between 2016 and 2019 (NSS Labs 2016; Sandvine 2016).

Despite the phenomenal rise in the use of cryptography, the emergence of a trillion-dollar computer security industry, unprecedented government interest and investment, and daily news stories describing the horrors of an insecure or overly secure Internet, academic work on cryptographic media has tended to focus on a few important but limited areas of investigation. Researchers in Internet Studies, Security Studies, and Science and Technology Studies have developed values and frameworks to analyze issues relating to policy change, privacy, and the ethical use of technology. Similarly, literature on the use of cryptography for privacy-enhancing technologies (PETs) – nearly a subfield into itself – is enormously vast. Technical domains of research, principally Computer Science, Engineering, and the mathematically oriented specialist field of Cryptography itself, are massive and well-funded (being, too often, cozy with corporate and government sponsors). Given the state of research and development, one might be mistaken in believing that cryptographic media are well understood. Far from it.

We might wonder, then, why have important questions not yet been *asked*? For instance, what *is* cryptography? Technologists, mathematicians, and engineers have answers, but they are not very satisfying – either doing too little or too much (the common plea that cryptography is just math is so broad that it risks explaining everything and nothing). Either way, these answers lack social and human richness. The questions motivating this chapter cut across many domains: why, given its ubiquity, is encryption not considered one of the fundamental media technologies

of the twentieth century (alongside radio, telephone, and television), and how do we explain its emergence and its future?

Asking a basic question about the social and human dimensions of cryptographic media brings into view a host of practices often taken for granted and highlights the ways that social activities underpin existing domains of analysis. Who uses cryptography, how, and for what reasons is still poorly understood. We still lack a sufficient theoretical framework for cryptography, which would help inform existing discussions of social and human issues broadly, such as policy and ethics. Perhaps cryptographic media is not studied because we mistakenly believe that encrypted communication changes nothing, since, after all, encrypted communication is usually decrypted at its terminal location, seemingly returned to its original. But, by ignoring the subtle mediatic changes of encryption and decryption we may have missed something, and possibly something important, since nearly all digital communication is underpinned by ubiquitous cryptography. As we learned long ago from media theory investigating both old and new media alike, taking stock of media effects and understanding their processes and dynamics is important analytical work, even when the effects are very subtle and nearly invisible.

What resources might we draw on for this cryptographic media theory? Comparisons to mimetic (and largely pre-digital) media, such as radio, telephone, and television, seem to result in an analytical dead end. Instead, we might look to comparisons with writing media. Epistolary practices, in particular, might be updated from paper and pen to encrypted emails and social media messaging and offer ready comparison to the coded letters of the past. The media effect is not limited to material transformations either – cryptography vacillates between the temporality of microseconds needed for encryption and trillions of years needed for cryptanalysis (Brunton 2014). And, if we were to draw comparison to mimetic media, we would at least need to redraw the frame: no longer analog TV but now Netflix (encrypted with digital rights management) or peer-to-peer media transmission through the cryptographically hashed and tunneled BitTorrent network and “plain old telephone system” (POTS) replaced by secure voice-over-IP telecommunication. Deeper comparisons might look to new cryptographic applications, such as the emerging and exotic forms of homomorphic encryption, quantum cryptography, or blockchain and cryptographically enabled social consensus technologies.

Before moving on, it is worth pausing on the work of Friedrich Kittler, who can be read as a media theorist deeply interested in cryptography and therefore might be seen as an occult figure for the field. Specifically, Kittler drew comparisons between the media of alphabets, writing, and cryptology. These media are connected through discrete and combinatory analytics and common media effects. Famously, Kittler saw how the typewriter-cum-encryptor eclipsed the hand as a technical media (Kittler 1999). From this history, Kittler concluded that our age of “high technology... ends in cryptograms that defy interpretation and only permit interception” (Kittler 1999). Thus, the media teleology of writing technology is one that advances from hand to typewriter to cryptography.

Unfortunately, Kittler approached cryptography in much the same way as other scholars of military signals intelligence and computer security, focusing on

technological application and secret state machinations. Among other issues, in focusing on this traditional view, Kittler failed to see how cryptography would be applied to consumer and other uses. Kittler's analysis thus missed the transition implied by his own media theory, from its multiple and varied roots (including military and state actions) to its emergence as the dominant mode of media today. Nonetheless, the discourse network 2000, to follow Kittler's (1990) analytic, is encrypted.

Despite being a multibillion dollar industry, with a massive, deep, and vibrant research community, very little attention has been paid to what the domain of cryptography covers and what its constituent parts are. This includes engineering and technical fields as well as social sciences and humanistic disciplines (even the groundbreaking *Software Studies* (2008) collection fails to make reference to cryptographic media). Basic categorical questions remain largely unasked, let alone answered. What *is* encryption and decryption, and what is the relationship to cryptanalysis (code-breaking) and hashing (i.e., the process of creating a message digest or digital fingerprint)? Do metaphors of hiding or obfuscation have useful meaning for studying cryptology? What is the relationship between cryptography and code? Cryptography and language? we know cryptographic media and what does (or doesn't) it communicate?

It is puzzling that these questions remain unanswered. Cryptographic media pervades all digital technology and have done so for quite a while. Half a century ago, Alfred Dodd remarked that we are in "a cipher age" (Ellison and Kim 2018), and yet, while we have gotten much better at *making* cryptographic media, we have not significantly improved our *understanding* of it.

This chapter probes these questions and offers a description of the stakes implied in potential answers. This exploration builds on a multidisciplinary pastiche of cognate problematics and explorations. DuPont (2018b, 2018a) offers an initial set of explorations toward a framework for conceptualizing cryptography technologies and **encryption simpliciter**. In addition to the analysis of encryption, these cognate problematics and their authors include **obfuscation and hiding** (Mateas and Montfort 2005; Brunton and Nissenbaum 2015), **code** (Drucker 1995; Liu 2004; Cramer 2005; Fuller 2008), **language** (Eco 1986; Raley 2003; Lennon 2010), and **epistemology** (Pesic 2000). In asking these questions and surveying existing literatures, this chapter seeks to highlight the *need for future research* and helps to sketch the conceptual terrain that this research might take.

Encryption

Commonly, cryptography is believed to have arisen out of statecraft and military research and development, especially during the last century. This narrative has led to the belief that cryptology is intimately associated with mathematics and physical sciences research, which proved decisive for the field's instrumentalization and growth. DuPont (2018b, 2018a) problematizes the analytical assumptions implied in this account, while others have sought to draw much longer and richer histories

(e.g., Potter 1989; Rosenheim 1997; Pesic 2000; Sherman 2010; Ellison and Kim 2018).

Cryptology is comprised of a set of constitutive processes, which includes encryption, decryption, cryptanalysis (code-breaking), codes, and hashing (a message digest or digital fingerprint). Encryption is the principal technique. Historical accounts differ in their typologies, but most accept these basic categories. For example, according to David Kahn (1967), the field of cryptology covers cryptography (encryption and decryption), cryptanalysis, and “codes” (he calls the special kind of substitution codes prevalent in medieval and late modern cryptology “nomenclatures”). The media theorist Friedrich Zielinski (2008) implicitly adapted Kahn’s typology and included “secret” or “hidden” writing, called steganography (traditionally, these methods included disappearing ink and the like but are now typically digital; see also Rosenheim 1997). The challenge facing both Kahn’s and Zielinski’s accounts is that the constituent parts are analytically muddled, held together in a historical assemblage but for no clear reason. This analytical muddiness mirrors practice, which tends to blend techniques and technologies together.

There are two dominant narratives used to explain and differentiate encryption: technology and mathematics. In the first, cryptological technologies are delineated by their algorithms (e.g., DES, RSA, or primitives such as s-boxes). Oftentimes, these technologies are measured by their perceived “strength” (usually a measure of computational “effort” or time needed to crack the encryption). This measure, however, turns out to be highly idiosyncratic and context-specific. Technical measures are themselves contingent on known mathematical properties. During and immediately following the World War II, Claude Shannon applied emerging mathematical approaches to the study of cryptography. Principally, this included Nyquist’s (1924) and Hartley’s (1928) work on telegraph transmission, as well as other minor developments (Thomsen 2009). In so doing, Shannon (1945, 1949) elevated the study of cryptology to a science but also as a deeply mathematical one.

Another key moment in the mathematization of cryptology occurred in the early 1970s. Public-key cryptography was first invented (and classified) between 1970 and 1974 by researchers working at GCHQ (Ellis 1970; Cocks 1973; Williamson 1974) and then reinvented publically in 1976 by Whitfield Diffie and Martin Hellman (1976). Within the GCHQ, inspired by the Bell C43 analog vocoder encryption machine (a later variant of the more famous SIGSALY machine), James Ellis proposed the possibility of a digital encryptor comprised of lookup tables, calling his “existence theorem” a type of non-secret encryption (Ellis 1970). However, his idea initially lacked a practical method for making the needed “irreversible” lookups, which, within a few years, were supplied by two other GCHQ researchers, Clifford Cocks (1973) and Malcolm Williamson (1974). Both Cocks and Williamson used sophisticated number theory for their solutions (Cocks’ solution was essentially the RSA algorithm that was later developed, which today powers a large proportion of online encryption) (Ellis 1999). The GCHQ did not immediately exploit the invention, and it remained classified until December 1997. Around the same time as the original invention (although unaware of the GCHQ researchers’ work), Whitfield Diffie began exploring the possibility of encryption that would be suitable for

emerging “online” applications, such as e-mail, and was soon joined by Martin Hellman. Like Cocks, Diffie and Hellman initially lacked a suitable method for irreversible lookup. The successful method, later called a “one-way function” or “trap-door knapsack,” would be supplied by Ralph Merkle, although other possible solutions were proposed (Diffie 1988). The result of this work was a reinvention of non-secret cryptography, then called a “public-key cryptosystem,” which was detailed in a groundbreaking publication by Diffie and Hellman (1976). The invention of public-key cryptography was considered a breakthrough made possible by the union of mathematics and technology and has set the conceptual narrative since.

In fact, the introduction of mathematical thinking to the field of cryptology is a recent addition. For most of the history of cryptology (several millennia), the domain of study was writing and empirical science (including occult science). In the past, cryptography has been called everything from “the art of reckoning” (Oxford English Dictionary 2014) to “brainwork” (see Ellison and Kim 2018). Given this longer timespan and wider-ranging analytic, it is clear that cryptographic media are not so much mathematical – although the processes may involve mathematical thinking or exploits. Rather, encryption is the process of ordering discrete (notational) tokens in such a way that it takes advantage of combinatory expansiveness (DuPont 2017c, b). Decryption is its deterministic reverse. Cryptanalysis or “code-breaking,” on the other hand, is ontologically and methodologically distinct from encryption and decryption (DuPont 2018a). Any technique can be considered a form of cryptanalysis, but typically cryptanalysis uses either intuition (guessing) or a statistical measure. In this way, cryptanalysis is ontologically (and historically) related to natural language but distinct from encryption and decryption (DuPont 2018a). A cryptographic hash has some ontological similarities to encryption and decryption (it orders discrete tokens), but since hashes are informationally destructive (i.e., permanently entropic), in ways that encryption and decryption are not, hashing is related to but distinct from encryption.

Obfuscation and Hiding

Descriptions of cryptographic media invariably include reference to obfuscation, hiding, veils, covers, and secrets. These techniques are technologically mediated, social relations of information transfer. Obfuscation is “the deliberate addition of ambiguous, confusing, or misleading information” (Brunton and Nissenbaum 2015), while hiding is its converse, a social relation that excludes or limits access to information. One version of information hiding is steganography, which makes the very presence of information traces unknown (unlike encryption, which merely “hides” the “meaning” of the message) (Cole 2003). Many techniques of obfuscation and hiding are in fact related to, but – it must be stressed – distinct from encryption.

Obfuscation and hiding are metaphors that often stand in for the range of processes applicable to cryptographic media. However, it is far from obvious what these metaphors describe. For instance, what is a hidden or obscured message, and how does “secret transmission” work? (The latter is troublesomely oxymoronic.)

Nonetheless, metaphors can possess explanatory power. There are two basic classes of motivation relevant to techniques of obfuscation and information hiding: aesthetics and control (and a correlate set of politics and counterpolitics).

The aesthetics of obfuscation have been most fully explored in the production of software code. Software source code typically strives for clarity, minimalism, and elegance, in contrast to obfuscated code, which is opaque, complex, and convoluted. Obfuscated code may be the result of inattention and lack of programming skill (so-called “spaghetti code”) or, more interestingly, purposefully playful and clever programming that challenges the user’s or observer’s wit. One way to produce obfuscated code is by using “weird” or “esoteric” programming languages such as Brainfuck or INTERCAL (Mateas 2008). Another way to produce obfuscated code is by writing software source code in a deliberately obscure manner, taking advantage of naming confusion, data/code/comment confusion, pointer confusion, pattern-matching obfuscation, and multiple semantic codings (Montfort 2008). The best examples of obfuscated code are aesthetic in some deliberate way, being ironical, satirical, playful, beautiful, or clever.

Malbolge is a weird programming language that, in particular, highlights the ways obfuscated code blurs the line between “human-readable” software code (a quasi-language) and ciphertext. In their exploration of Malbolge, Michael Mateas and Nick Montfort (2005) describe the efforts of Andrew Cooke to produce the first-ever running Malbolge program. Whereas most weird languages, such as Brainfuck or INTERCAL, are intended to create a kind of mental torment for the user or observer, Malbolge was specifically “designed to be incomprehensible” (Ben Olmstead quote in Mateas and Montfort 2005). Because of this incomprehensibility – deploying a huge range of obfuscatory tricks – it took Cooke two years before he was able to produce the first “hello world” program in Malbolge, and this was only possible with the aid of an artificial intelligence search technique. Cooke’s search technique took advantage of the previous effort by Lou Scheffer, who had discovered several “weaknesses” in the process of his “cryptanalysis” of the language. Interestingly, Scheffer characterized his efforts as “a cryptographer and not a programmer” (Scheffer quoted in Mateas and Montfort 2005). This extreme example pushes the meaning of “programming language” beyond other weird languages, which exploit the limits of human comprehension and intelligibility, and, instead, enters into the realm of cryptanalysis. Thus, when it comes to obfuscated code, there is a continuum between, say, human-readable Python code, machine-cryptanalyzed Malbolge, and (one can imagine) pure ciphertext created by Advanced Encryption Standard (AES) encryption.

Obfuscation is also used to control information. Brunton and Nissenbaum (2015) describe multiple politics and counterpolitics of obfuscation technologies, which are partial and fugitive when compared to the “total” technologies of encryption. Since, they argue, surveillance technologies are often aligned against individuals, counterpolitical obfuscation technologies can be used to “put some sand in the gears, to buy time, and to hide in the crowd of signals,” but obfuscation techniques, they remind us, are a tactic, not a strategy (Brunton and Nissenbaum 2015). That is, the counterpolitics of obfuscation are a temporary fix and are not intended to replace

full-blooded governance or politics. Privacy is a primary goal for obfuscation, but not a limiting criterion.

There are many types and techniques of obfuscation and hiding used to control information. Techniques include adding information or messages (perhaps to an excess), rerouting or readdressing information, burying information within larger collections, blending or combining information, being vague, and creating fake information. Consider the example of the web browser plugin AdNauseam. AdNauseam is a tool to avoid commercial surveillance, typically from advertising networks. Rather than block ads (as traditional ad blockers do) or try to hide from them (as, in a way, virtual private networks do), AdNauseam overwhelms surveillance by virtually “clicking” on *every* ad. In so doing, AdNauseam obscures information traces left by a web browser. Obscuring information traces does not guarantee the user complete privacy – clever or dedicated analysis might be able to detect the authentic trace within the fog of fake clicks – but it does offer a ready-at-hand tactic when more robust solutions, such as encryption, are not available.

Code

Historically, codes were cryptographic. Newspapers published daily code puzzles and cryptograms, governments communicated through encrypted messages, and school boys and lovers alike sent messages encrypted with private schemes. Words like codes were, and are, analogical and polysemic. Today, however, the term has largely lost this meaning. More often than not, our encounter with “code” is with digital systems, now studied by Computer Science and Engineering disciplines. Transmission and compression codes are vibrant areas of research, and cryptography has in turn taken on its own specialized and distinct form of study. However, the distinction between these many types of code is in fact fuzzy. For example, “Morse code” is a digital transmission code that was designed for transmission efficiency but also worked as a kind of weak cipher (and many variants of telegraph code were produced that utilized stronger forms of encryption). Or consider that, in 2012, when the participants of a “cracking challenge” attempted to cryptanalyze an encrypted e-poem written by William Gibson two decades prior (published in 1992 as part of the *Agrippa* art book), they found it more difficult to crack the ZIP compression than the weak RSA-type “encryption” (DuPont 2012, 2013). The lesson learned was that there is no clear, stable, or necessary differentiator between “encoding” and “encryption.”

The critical study of code, in the older sense still related to cryptographic media, has been largely left to those outside of technical fields—mostly humanists, critical literature and culture scholars, and social scientists. Historians, in particular, have been slowly but increasingly engaging the relationships between code, cryptography, and code-like things, such as “perfect languages” and proto-computers (Potter 1989; Eco 1995; Stolzenberg 2001; Long 2004; Maat 2004; Jones 2016; Ellison and Kim 2018). Codes are also sometimes discussed in histories of the nineteenth and twentieth centuries, when the use of cryptography was no longer a craft activity and

intellectual pastime (as it had been before); through the nineteenth and twentieth centuries, cryptography had become fully institutionalized within military and state apparatuses. Most of the literature on this era, however, is found in popular book surveys (e.g., Singh 2000; Churchhouse 2002) and the journal *Cryptologia*, written more often than not by retired engineers, and not professional historians. As one might expect, this literature has characteristic blind spots and often fails to provide rich scholarly critique. Exceptions include, for example, James Reeds, Whitefield Diffie, and J.V. Fields' (2015) report on "Tunny," but even this otherwise excellent work has an engineering slant – more often interested in cracking codes than contextualizing them.

The humanistic study of code and its intersections with cryptographic media has ranged widely. One area of exploration has included critical expositions of culture and politics. In his analysis of "cool" media, Alan Liu (2004) assessed the contradictory politics of cyberlibertarian organizations like the Electronic Frontier Foundation, who simultaneously call for "freedom" of information and unimpeded access to strong cryptography. Similarly, David Columbia (2016) took Bitcoin evangelists to task for fusing right-wing economics to what might be called the "value" layer of cryptographic media. Sybille Krämer (2015) broadened the conceptual terrain of coded cash: what she characterized as paradigmatic "symbolic" and "media" machines. That is, Krämer reconfigured the transmission function of money exchange, arguing that electronic money (such as cryptocurrency) is decontextualized, dematerialized (virtual), and ultimately indifferent (what economists call the "fungibility" of money). These studies redefine our view of the "media" dimension of cryptographic transmission.

The study of cryptographic media can also be approached from the view of symbols, text, and diagrammatic writing. The alphabet – created once (some 3000 years ago) but constantly evolving – has spurred many historical and contemporary connections to cryptographic media. In the Renaissance and modern ages, many scholars saw direct connections between the powers of letters and their combination through encryption (this included Francis Bacon and Gottfried Wilhelm von Leibniz, among others). Johanna Drucker (1995) explored many of the visual and diagrammatic aspects of the connection between cryptography and the alphabet by searching the cryptographic handbooks of John Wilkins, Johannes Trithemius, and Giambattista della Porta. These works are rich in visual complexity and diagrammatic sophistication and reveal connections between the materialities of letters and their representations. Brian Lennon (2015) traced the essential concepts of security and authentication through the literary history of philology, which, he argued, have conflicted natures, as words and non-words (or "passwords" in the tradition of Baudrillard). Florian Cramer (2005) explored the ways that "executable" code existed long before computers. According to Cramer, algorithmic code cannot be separated from our cultural imagination, in particular, as it exists in science, magic, and occult codes. The "spell of this magic act," writes Cramer, is the result of combinatory computation, which includes everything from the "cutup" prose of William Burroughs, Pythagorean musicology and logic, Hebrew Kabbalah, Ramon Lull's volvelles (thinking machines), Renaissance word generators, Jonathan Swift's

satirical combinatorial machine, and poetics ranging from the Oulipo to concrete poets to the net artist Jodi (Cramer 2005). Beneath this massive range of techniques and technologies lies a cultural history of computing, grounded in code practices that turn words into materials or ways of becoming “flesh” (Cramer 2005).

Cryptographic media are not natural language (at least not in a straightforward way), but they can be profitably related to writing and writing technologies (DuPont 2018b). Katherine Ellison has thoroughly explored these connections, arguing that writing is “naturally cryptographic” (Ellison 2008). Through a reading of modern cryptography manuals, Ellison argues that materiality is an important and consequent input to cryptographic media. For instance, John Wilkins’ *Mercury* was available as a printed book, but, crucially, the materiality of cryptography demanded more than the available print technologies could provide. In this era, printing technologies did not replace written manuscripts (as is sometimes believed); the required manual additions to *Mercury* show how cryptographic media was “multi-modal,” which, at least Wilkins believed, also led to increased security (Ellison 2011). For the “reader” of cryptographic media, too, the material hand and brain mattered. Cryptographic devices were craft materials, and while there is a formal sense that cryptography is abstract and pure (a “notation,” see DuPont 2017c), actually using cryptography requires “brainwork” and “handwork” and a corresponding set of technical skills (Ellison 2013). Critically, this meant that the process of reading and writing cryptographic media was necessary to learn, which was nonlinear, multiple, and puzzle-like (Ellison 2014). The reader and writer of cryptographic media were thus locked in a constantly negotiated “contract,” revealing and covering truth and meaning (Ellison 2008). Although the cryptography manuals Ellison explored date from the seventeenth and eighteenth centuries, they are far from insignificant to the origins of contemporary cryptography. These documents show the limits of human communication, the emergence of scientific (and later, industrial) practices, and, crucially, the emergence of the concept “information” and “information processing” (Ellison 2017).

The contemporary critical study of cryptographic media might be best situated within the emerging fields of Software Studies and Critical Code Studies yet to date this avenue remains largely unexplored. In the important edited volume *Software Studies* (Fuller 2008), cryptography receives only scant attention, retrospectively, through the inclusion of an essay on “code” by Kittler. As mentioned above, cognate topics are included, such as obfuscated code (Montfort 2008) and weird languages (Mateas 2008). Other works in the vein of Software Studies and Critical Code Studies make occasional mention of cryptography (Berry 2011; Cox et al. 2012), but rarely as a medium. When cryptography does get analytical treatment, it is usually in relation to science fiction topics (especially the novels of William Gibson and Neal Stephenson) (Hayles 1999; Liu 2004; Kirschenbaum 2008; Chun 2008; DuPont 2013) or discussions of privacy (Pasquale 2015) and hacking (Mackenzie 2006). Both Tung-Hui Hu (2015) and Siegfried Zielinski (2008) have tackled the topic somewhat more directly, but despite being otherwise fine studies, neither significantly reimagines the possibilities of what a critical study of cryptographic media might look like.

Language

Umberto Eco argues that cryptography is a special kind of code, distinct from natural language (Eco 1986). Using Hjelmslev's sign model, Eco describes natural language as a system of "double articulation" that creates semiotic connections across elements on the expressive and content planes. The content plane attaches meaning to particular semantic unities (through conceptual or psychological apparatuses), while the expression plane is the material substance of the sign and is devoid of meaning. Unlike natural language, cryptography is a system of "single articulation," devoid of meaning and working through the expression plane alone. "Ciphers," or the processes of encryption, are "correlational" codes that operate by the arbitrary transposition or substitution of alphabetic letters (Eco 1986). According to Eco, correlational codes, such as cryptography, are not a mechanism of communication but instead merely a transformation mechanism between two systems. Cryptography, Eco summarizes, "substitutes every minimal element of the plaintext with the element of another set of expressions" (Eco 1986).

Despite the clarity of Eco's semiotic analysis, the histories and genealogies of cryptography paint a different picture. Brian Lennon (2010) and Rita Raley (2003) have both argued that the post-World War II context of machine translation intersected with cryptography. Lennon described the intersection as a triumph of technology and science – motivated by advances in cryptography – which resulted in the artificial bifurcation of human language from code (Lennon 2010). Paradoxically, the advancements in postwar cryptography enabled machine translation to become much more effective and ubiquitous and therefore reconnected to translation's "hermeneutical" roots, in which, according to scholars like George Steiner, all discourses are translations (Steiner 1998; Lennon 2010). Raley (2003) makes a similar point, arguing that when Warren Weaver approached machine translation in the context of postwar cryptanalysis technology, he dismissed rhetorical nuances (as being too complicated for his vision of machine translation). In favoring a "universal signifier," Weaver actualized the goals of "Basic English" (an effort to create a simplified version of English, useful for global communication), which contributed to instrumental and technocratic rationality. The result, Raley worried, was that machine untranslatable knowledge would be abandoned (Raley 2003).

What these histories point to is a deeper connection between cryptography and language. Eco's point still stands – encryption is a correlational code distinct from natural language – but the history of machine translation connects not to encryption but to cryptanalysis (DuPont 2018a). The techniques that Weaver adapted from military cryptography were related to cryptanalysis, which uses statistical and intuitionistic techniques. The technocratic rationalities that worried Lennon and Raley were due to the application of statistical measurements that had long been part of cryptanalysis (DuPont 2018a). Recent developments in machine translation continue this trajectory, favoring "big data" and "machine learning" – learned from military cryptanalysis, refined by government surveillance and signals intelligence – at the expense of linguists, human translators, and hermeneutical sophistication.

Epistemology

For all the worries of “big data” and its largely unappreciated but necessary connection to cryptographic media, the techniques are nothing if not effective. As described, algorithmic and statistical techniques can be used for cryptanalysis and machine translation, as well as the curious imaginaries of finance, but they are also useful for investigating the natural world. Scientific advancements today often make use of techniques drawn from the tool chest of postwar cryptography and signal analysis. Despite the ethical and political contentiousness of this issue, science has discovered a powerful new epistemology. (This same debate has already played out in Digital Humanities, where critics have accused the field of ignoring its complicity in a post-Snowden surveillance state.) This epistemology, however, is far from new and connects in deep and significant ways to cryptography.

Peter Pesic (2000) has traced the epistemology of cryptographic media and its historical connections to scientific enterprises, finding a rich ontology and complex set of analytical tools. Francis Bacon, perhaps the patron saint of modern science, developed his tools of scientific analysis in relation to cryptography, even going so far as to develop his own (digital) cipher system (Pesic 2000). Bacon’s analysis was surprisingly prescient, even prefiguring “big data” approaches. For Bacon, nature’s raw “data” was an input to the empirical, inductive method, which could then be “computed” to yield insights into the secrets of nature. This vision of nature as secret and coded, and requiring a dynamic, combinatory epistemology, was actually somewhat common in Bacon’s day. For instance, Ramon Lull, a thirteenth-century Catalan polymath, developed a complex system of scientific analysis that utilized discrete symbol combination and permutation, which later influenced a young Leibniz (who would go on to lay the groundwork of our mathematics, logic, and computation). Today, this history is underappreciated, having fallen out of fashion due to its connections with occult symbolism, but it points to a deeper ontology of “executable” functions, discrete and analyzable natural substances, and the “unreasonable effectiveness of mathematics” (Wigner 1960; Kirby 2003).

This chapter described much more than debates about privacy and surveillance that typically surround cryptographic media. Instead, it pointed to a future mode of research that gives greater weight and significance to cryptographic media. Our scholarly forbearers already understood the significance of cryptography – to communication, language, meaning, and science – and future research may one day rehabilitate these insights. In fact, cryptographic media plays a large and important – and growing – role in society today, although this fact is widely unappreciated. Future research might question the ways that we are already committed to representation that is necessarily cryptographic. This research may redirect the dire warnings raised in the critical literature about the opacity of algorithmic, coded, and artificially intelligent software systems and recognize that the objects of such claims look a lot like cryptographic media. Politically, this research may point out the new modes of exclusion formed by cryptographic media. For example, when Google decides to encrypt e-mail transmission by default, how does our rhetoric and dialogue change when using these technologies? Here, in the name of “privacy,” Google blinds the

prying eyes of government and bad actors, but, one wonders, what else changes? (Note: the corporate prerogative to serve ads inside encrypted tunnels does not change; it merely mainlines the attention economy into so many “eyeballs.”) How does cryptographic media change our relationship with expressions, media, and, above all, human and machine interaction?

References

- Berry DM (2011) *The philosophy of software: code and mediation in the digital age*. Palgrave Macmillan, New York
- Brunton F (2014) *Kleptography Radical Philosophy*:2–6
- Brunton F, Nissenbaum H (2015) *Obfuscation: a User’s guide for privacy and protest*. MIT Press
- Chun WHK (2008) *Control and freedom: power and paranoia in the age of Fiber optics*. MIT Press, Cambridge, MA
- Churchhouse RF (2002) *Codes and ciphers: Julius Caesar, the enigma, and the internet*. Cambridge University Press, Cambridge
- Cocks CC (1973) A Note on “Non-Secret Encryption”. <https://www.gchq.gov.uk/notenon-secret-encryption>
- Cole E (2003) *Hiding in plain sight: steganography and the art of covert communication*. Wiley, Indianapolis
- Cox G, McLean A, Berardi F “Bifo” (2012) *Speaking code: coding as aesthetic and political expression*. MIT Press, Cambridge, MA
- Cramer F (2005) *Words made flesh: code, culture, imagination*. Piet Zwart Institute, Rotterdam
- Diffie W (1988) First ten years of public-key cryptography. Proc IEEE 76:560–577
- Diffie W, Hellman ME (1976) New directions in cryptography. IEEE Trans Inf Theory 22:644–654
- Drucker J (1995) *The alphabetic labyrinth: the letters in history and imagination*. Thames and Hudson, New York
- DuPont Q (2018a) The cryptological origins of machine translation, from al-Kindi to Weaver. *Amodern* 8, pp 1–20. <http://amodern.net/article/cryptological-origins-machine-translation/>
- DuPont Q (2018b) The printing press and cryptography: Alberti and the Dawn of a notational epoch. In: Ellison K, Kim S (eds) *A material history of medieval and early modern ciphers: cryptography and the history of literacy*. Routledge, New York, pp 95–117
- DuPont Q (2017b) Blockchain identities: notational Technologies for Control and Management of abstracted entities. *Metaphilosophy*. <https://doi.org/10.1111/meta.12267>
- DuPont Q (2017c) An archeology of cryptography: rewriting plaintext, encryption, and ciphertext. PhD dissertation, University of Toronto
- DuPont Q (2012) Cracking the Agrippa Code. <http://www.crackingagrippa.net/>. Accessed 19 Oct 2012
- DuPont Q (2013) Cracking the Agrippa code: cryptography for the digital humanities. *Scholarly and Research Communication* 4:1–8. <https://doi.org/10.22230/src.2013v4n3a126>
- Eco U (1986) *Semiotics and the philosophy of language*. Indiana University Press, Bloomington
- Eco U (1995) *The search for the perfect language*. Blackwell, Cambridge, MA
- Ellis JH (1999) The history of non-secret encryption. *Cryptologia* 23:267–273. <https://doi.org/10.1080/0161-119991887919>
- Ellis JH (1970) The possibility of secure non-secret digital encryption. <https://www.gchq.gov.uk/possibility-secure-non-secret-encryption>
- Ellison K (2008) Cryptogrammatophoria: the romance and novelty of losing readers in code. *Eighteenth Century Fiction* 20:281–305
- Ellison K (2011) Millions of millions of distinct orders: multimodality in seventeenth-century cryptography manuals. *Book History* 14:1–24

- Ellison K (2013) Digital scholarship as handwork and brainwork: an early modern history of cryptography. *Journal for Early Modern Cultural Studies* 13:29–46
- Ellison K (2014) ‘1144000727777607680000 wayes’: Early Modern Cryptography as Fashionable Reading. *Journal of the Northern Renaissance* 6. <http://www.northernrenaissance.org/1144000727777607680000-wayes-early-modern-cryptography-as-fashionable-reading/>
- Ellison K (2017) A cultural history of early modern English cryptography manuals. Routledge, New York
- Ellison K, Kim S (eds) (2018) A material history of medieval and early modern ciphers: cryptography and the history of literacy. Routledge, New York
- Fuller M (ed) (2008) Software studies: a lexicon. MIT Press, Cambridge, MA
- Gebhart G (2017) We’re Halfway to Encrypting the Entire Web. In: Electronic Frontier Foundation. <https://www.eff.org/deeplinks/2017/02/were-halfway-encrypting-entire-web>. Accessed 20 Jun 2017
- Golumbia D (2016) The politics of bitcoin: software as right-wing extremism. University Of Minnesota Press, Minneapolis
- Hartley RVL (1928) Transmission of information. *Bell Syst Tech J* 3:535–563
- Hayles NK (1999) How we became Posthuman: virtual bodies in cybernetics, literature, and informatics. University of Chicago Press, Chicago
- Hu T-H (2015) A prehistory of the cloud. The MIT Press, Cambridge, MA
- Jones ML (2016) Calculating devices and computers. In: Lightman BV (ed) A companion to the history of science. Wiley, Malden, pp 472–481
- Kahn D (1967) The codebreakers: the story of secret writing. Macmillan, New York
- Kirby V (2003) Enumerating language: “the unreasonable effectiveness of mathematics”. *Configurations* 11:417–439. <https://doi.org/10.1353/con.2004.0028>
- Kirschenbaum M (2008) Mechanisms: new media and the forensic imagination. MIT Press, Cambridge, MA
- Kittler F (1999) Gramophone, film, typewriter, 1st edn. Stanford University Press, Stanford
- Kittler F (1990) Discourse networks 1800/1900. Stanford University Press, Stanford
- Korolov M (2016) Study: Encryption use increase largest in 11 years. In: CSO Online. <http://www.csoonline.com/article/3088916/data-protection/study-encryption-use-increase-largest-in-11-years.html>. Accessed 20 Jun 2017
- Krämer S (2015) Medium, messenger, transmission: an approach to media philosophy. Amsterdam University Press, Amsterdam
- Lennon B (2010) In Babel’s shadow : multilingual literatures, monolingual states. University of Minnesota Press, Minneapolis
- Lennon B (2015) Passwords: Philology, Security, Authentication Diacritics 43:82–104
- Liu A (2004) The Laws of cool: knowledge work and the culture of information. University of Chicago Press, Chicago
- Long PO (2004) Openness, secrecy, authorship: technical arts and the culture of knowledge from antiquity to the renaissance, paperbacks ed. Johns Hopkins University Press, Baltimore
- Maat J (2004) Philosophical languages in the seventeenth century: Dalgarno, Wilkins, Leibniz. Springer, Dordrecht
- Mackenzie A (2006) Cutting code: software and sociality. Peter Lang, New York
- Mateas M (2008) Weird Languages. In: Fuller M (ed) Software studies: a lexicon. MIT Press, Cambridge MA
- Mateas M, Montfort N (2005) A box, darkly: Obfuscation, weird languages, and code aesthetics. In: Proceedings of the 6th Digital Arts and Culture Conference, IT University of Copenhagen. pp 144–153
- Montfort N (2008) Obfuscated code. In: Fuller M (ed) Software studies: a lexicon. MIT Press, Cambridge MA
- NSS Labs (2016) NSS Labs Predicts 75% of Web Traffic Will Be Encrypted by 2019. <https://www.nsslabs.com/company/news/press-releases/nss-labs-predicts-75-of-web-traffic-will-be-encrypted-by-2019/>. Accessed 20 Jun 2017

- Nyquist H (1924) Certain factors affecting telegraph speed. *Bell Syst Tech J* 3:324–346
- Oxford English Dictionary (2014) algorithm, n. OED Online
- Pasquale F (2015) The black box society: the secret algorithms that control money and information. Harvard University Press, Cambridge, MA
- Pesic P (2000) Labyrinth: a search for the hidden meaning of science. MIT Press, Cambridge, MA
- Potter L (1989) Secret rites and secret writing: royalist literature. Cambridge University Press, New York, pp 1641–1660
- Raley R (2003) Machine translation and global English. *The Yale Journal of Criticism* 16:291–313. <https://doi.org/10.1353/yale.2003.0022>
- Reeds JA, Diffie W, Field JV (eds) (2015) Breaking Teleprinter ciphers at Bletchley Park: an edition of I.J. Good, D. Michie and G. Timms: general report on tunny with emphasis on statistical methods (1945). Wiley-IEEE Press, Hoboken
- Rosenheim S (1997) The cryptographic imagination: secret writings from Edgar Allan Poe to the internet. The Johns Hopkins University Press, Baltimore
- Sandvine (2016) 70% Of Global Internet Traffic Will Be Encrypted In 2016. <https://www.sandvine.com/pr/2016/2/11/sandvine-70-of-global-internet-traffic-will-be-encrypted-in-2016.html>. Accessed 20 Jun 2017
- Shannon C (1945) A mathematical theory of cryptography. Bell labs. Murray Hill
- Shannon C (1949) Communication theory of secrecy systems. *Bell Syst Tech J* 28:656–715
- Sherman WH (2010) How to make anything signify anything. Cabinet
- Singh S (2000) The code book: the science of secrecy from ancient Egypt to quantum cryptography. Anchor Books, New York
- Steiner G (1998) After babel: aspects of language and translation, third edition. Oxford Paperbacks, New York
- Stolzenberg D (ed) (2001) The great art of knowing: the baroque Encyclopedia of Athanasius Kircher. Stanford University Libraries, Florence
- Thomsen SW (2009) Some evidence concerning the genesis of Shannon's information theory. *Stud Hist Phil Sci* 40:81–91
- Wigner EP (1960) The unreasonable effectiveness of mathematics in the natural sciences. *Commun Pure Appl Math* 13:1–14
- Williamson MJ (1974) Non-secret encryption using a finite field. <https://www.gchq.gov.uk/non-secret-encryption-using-finite-field>
- Zielinski S (2008) Deep time of the media: toward an archaeology of hearing and seeing by technical means. MIT Press, Cambridge, MA



Disguised Propaganda from Digital to Social Media

39

Johan Farkas and Christina Neumayer

Contents

Introduction	708
Propaganda and Media	708
Propaganda and Digital Media	710
Disguised Propaganda: Obfuscated and Impersonated Forms	711
Disguised Propaganda in Digital Media	713
Disguised Propaganda on Social Media	716
Countering Disguised Propaganda on Social Media	719
Conclusion	721
References	721

Abstract

Disguised propaganda and political deception in digital media have been studied since the early days of the World Wide Web. At the intersection of internet research and propaganda studies, this chapter explores disguised propaganda on websites and social media platforms. Based on a discussion of key concepts and terminology, this chapter outlines how new modes of deception and source obfuscation emerge in digital and social media environments, and how this development complicates existing conceptual and epistemological frameworks in propaganda studies. The chapter concludes by arguing that contemporary challenges of detecting and countering disguised propaganda can only be resolved, if social media companies are held accountable and provide the necessary support for user contestation.

J. Farkas (✉)

School of Arts and Communication, Malmö University, Malmö, Sweden
e-mail: johan.farkas@mau.se

C. Neumayer

Digital Design Department, IT University of Copenhagen, Copenhagen, Denmark
e-mail: chne@itu.dk

Keywords

Disguised propaganda · Manipulation · Disinformation · Fake news · Deception · Social media

Introduction

@cj_panirman: RT @realDonaldTrump: Time to #DrainTheSwamp in Washington, D.C. and VOTE #TrumpPence16 on 11/8/2016. Together, we will MAKE AMERICA SAFE ...

@natespuewell: #NeverTrump Those fake, nonsense polls are actually real, good polls, Trump's spokesman insists — Campaign of lies <https://t.co/Mvja0PPeaH> (Bessi and Ferrara 2016)

At first glance, the above quotes from Twitter during the 2016 US elections appear as deriving from citizens supporting the Republican candidate, Donald Trump and the Democratic candidate, Hillary Clinton, respectively. In fact, they were both produced by *social bots*, software-driven social media profiles created to give a deceptive impression of public support (Bessi and Ferrara 2016). Since the dawn of the World Wide Web, political groups and activists have appropriated digital platforms to further partisan agendas based on a range of dissemination tactics (Milan 2013). With the evolution of digital technologies and platforms, communication strategies have developed concurrently, as political actors have iteratively sought to increase their influence. This chapter examines the evolution of disguised propaganda in digital media, relying on identity deception to manipulate online users.

With the development of digital platforms from websites to social media environments, new modes of propaganda have emerged. Situated at the intersection of propaganda studies and internet research, this chapter provides an overview of the development of disguised propaganda from digital to social media. First, the chapter outlines the historical relationship between propaganda and mass media technologies, as conceptualized within the field of propaganda studies. Second, the chapter presents a working definition of disguised propaganda, including the subcategories of *obfuscated* and *impersonated* propaganda (also defined as *gray* and *black propaganda*). Third, the chapter examines the use of disguised propaganda on relatively static websites, followed by an inquiry into disguised propaganda on social media platforms. Finally, the chapter discusses contemporary and future problems of resistance against disguised propaganda.

Propaganda and Media

Although the roots and etymology of propaganda predate electronic communication by several centuries (Auerbach and Castronovo 2013), scholarly engagement with the topic has historically been inseparable from the rise of mass media technologies

in the twentieth century. Accordingly, the field of propaganda studies has traditionally defined propaganda as intimately connected to media channels such as radio, television, film, and newspapers. In his book *Public Opinion*, Walter Lippmann (1946) referred to “the manufacture of consent” as “capable of great refinements” (98), a process of manipulation open to anyone who understands and can control it. Herman and Chomsky (1988) in their influential work *Manufacturing Consent* define propaganda as phenomena that “require the collaboration of the mass media” (Herman and Chomsky 1988, p. 33). Similarly, Ellul argued that propaganda “cannot exist without using these mass media” (Ellul 1965, p. 9). Later, Cunningham (2002) wrote that it would be “problematic for us to read anything like modern and contemporary propaganda back into periods before the emergence of mass media and mass communication” (17–18). Propaganda, as manifested in the twentieth century, is perceived as a distinctly modern phenomenon interwoven with channels of mass communication.

This points to a second characteristic of propaganda, as defined within the field of propaganda studies, namely the *source* of propaganda. Many scholars define propaganda as de facto propagated by large organizations such as political and military institutions or commercial corporations (see Ellul 1965, Herman and Chomsky 1988, Sproule 1994). As Sproule (1994) argues:

Propaganda represents the work of *large organizations or groups* to win over the public for special interests through a *massive orchestration* of attractive conclusions packaged to conceal both their persuasive purpose and lack of sound supporting reasons. (Sproule 1994, p. 8, added emphasis)

From this perspective, propaganda encompasses mass-mediated manipulation organized on a grand scale to persuade a public. The goal of such persuasion is typically “closely attuned to elite interests” (Herman and Chomsky 1988, p. 32). Not all scholars, however, exclusively attribute propaganda to elite groups. This is central to this chapter, as digital media’s decentralized mode of content production challenges the perception that propaganda only derives from centralized sources. As a conceptual vocabulary to distinguish between hierarchical and nonhierarchical propaganda, Ellul (1965) proposes the concepts of *vertical* and *horizontal* propaganda.

As part of a rigorous typology, Ellul (1965) introduces the concepts of vertical and horizontal propaganda to distinguish between propaganda from societal elites and from small citizen groups. Accordingly, Ellul (1965) argues that not all propaganda is connected to political, military, or commercial organizations, although it is “by far the most widespread” (80). To Ellul (1965), vertical propaganda is characterized by originating from elites who rely on mass media to persuade an audience into submission and action. One-to-many communication channels are vital in this regard, as they are means of mass mobilization of crowds to do the bidding of the source (e.g., the government, party leader, general, or company).

Vertical propaganda is particularly effective in *propaganda of agitation*, which is created to mobilize crowds against a portrayed enemy, a “source of all misery” (Ellul 1965, p. 75). Hitler’s campaigns against the Jews and Lenin’s campaigns

Table 1 Characteristics of vertical and horizontal propaganda

	Vertical propaganda	Horizontal propaganda
Source:	Elite organizations and groups	Small citizen groups
Relies on:	Centralized orchestration of mass media	Well-organized groups with a common ideology (not depending on mass media)
Used for:	Propaganda of agitation <i>and</i> integration	Propaganda of integration

against the Kulaks are both examples of such propaganda. In practice, Ellul (1965) argues, agitational campaigns always derive from societal elites. Yet, propaganda of agitation can be effective in getting the audience to take ownership of the constructed narrative, amplifying and extending it. If successful, agitational propaganda does therefore not necessarily rely on a continuous orchestration of mass media, as “each person seized by it” can in turn become their own “propagandist” (Ellul 1965, p. 74).

Conversely to *vertical* and *agitational* propaganda, *horizontal* and *integrational* propaganda are aimed at “stabilizing the social body, at unifying and reinforcing it” (Ellul 1965, p. 75). These forms of propaganda can originate from both societal elites, such as governments seeking to stabilize societies during political crises, and from citizens. *Horizontal propaganda* relies on small, autonomous groups, cooperating based on a common ideology. It is distinct by deriving from inside the population and “not from the top” (Ellul 1965, p. 81). According to Ellul (1965), this form of propaganda is a rare phenomenon, nonexistent before the twentieth century. The decentralized propaganda of Mao’s China is highlighted as an example. Unlike vertical propaganda, which “needs the huge apparatus of the mass media of communication” (Ellul 1965, p. 82), horizontal propaganda only relies on a “huge organization of people” (82). Media control, in other words, is inseparable from vertical propaganda but is not similarly fundamental for horizontal propaganda. Table 1 presents an overview of the conceptual differences between the two.

Propaganda and Digital Media

Within the last decade, scholars in propaganda studies have argued that the rise of digital media complicates existing theoretical understandings of propaganda, specifically the relationship between propaganda, large-scale organizations, and mass media (Jowett and O’Donnell 2012; Auerbach and Castronovo 2013). Models of propaganda that illustrate how media conglomerates and governments together manufacture systemic biases have somewhat lost their pertinence (Auerbach and Castronovo 2013). The fundamental notion that propaganda relies on centralized control of mass media by large-scale organizations does not seem to encapsulate digital spaces in which propaganda can potentially derive from a multitude of sources. This development signifies a transformation of how scholars should analyze and approach propaganda:

The Internet is now becoming an increasingly important source of information in our society... The potential for propaganda in such a climate is *infinite*. *Anyone* can spread a message, true or false, or manipulate information or even alter a picture to suit his or her own ends. (Jowett and O'Donnell 2012, p. 160, added emphasis)

In online environments, millions of users operate with crosscutting motives and goals, which challenges and alters the analysts' task of identifying coordinated propaganda campaigns and their underlying political agendas. Clear-cut conceptual boundaries, such as that between vertical and horizontal propaganda, seem to be reshaped into complex continuums going from propaganda at the individual level to that of nation states and multinational conglomerates. Digital media platforms introduce new modalities of propaganda, such as the use of social bots (Shao et al. 2017) and state-organized 'troll armies' (Aro 2016). Taken together, these changes could seem to represent the end, or at least a new beginning, for the field of propaganda studies, but this would be an oversimplified conclusion. Although the internet challenges existing conceptualizations of propaganda, scholars should not be " lulled into thinking that information is now open and free for all" (Auerbach and Castronovo 2013, p. 12). Digital media's potential for decentralized communication, in other words, should not be equated to a fundamental democratization of information, transcending existing power relations and control.

Herman and Chomsky (2008) argue that the rise of digital media represents a vital new means of communication for political movements across the globe. Yet, the internet should not be seen as a fundamentally democratizing force, destabilizing societal elites and their ability to exercise control through mass orchestrated propaganda. As with all new communication technologies, Herman and Chomsky argue, the internet will first and foremost serve elite and corporate interests. Consequently, the internet functions as means of control to those already in power more than it represents "an instrument of mass communication for those lacking brand names, an already existing audience, and/or large resources" (Herman and Chomsky 2008). Rather than reinventing the wheel, we need to build upon conceptualizations and terminology of propaganda studies to understand the consequences of disguised propaganda in digital and social media.

Disguised Propaganda: Obfuscated and Impersonated Forms

Propaganda has been defined as the "deliberate, systematic attempt to shape perceptions, manipulate cognitions, and direct behavior to achieve a response that furthers the desired intent of the propagandist" (Jowett and O'Donnell 2012, p. 7). Drawing on this definition, *disguised propaganda* can be defined as the *deliberate use of disguised sources to manipulate and shape perceptions to achieve a desired outcome*. Within the field of propaganda studies, this specific type of manipulation has also been labeled covert (Ellul 1965; Sproule 1994; Linebarger 2010), clandestine (Soley and Nichols 1987), or concealed propaganda (Jowett and O'Donnell 2012). These terms all point to a specific form of deceptive manipulation, relying on a

tactical blurring and misattribution of sources. Drawing on Hancock (2012), disguised propaganda can be defined as a form of *identity-based deception*, which stands in contrast to *message-based deception* (in which content is manipulated, rather than its source). As such, disguised propaganda relies on the manipulation of sources but not necessarily on the falsification of presented messages (although the two are often interconnected).

Overall, disguised propaganda can be divided into two subcategories: *gray* and *black propaganda* (Jowett and O'Donnell 2012). In gray propaganda, sources are deliberately obfuscated, making it either impossible or difficult to identify the propagandist hiding underneath (Sproule 1994). In black propaganda, disseminated messages are attributed to a false source, which is “presented by the propagandizer as coming from a source inside the propagandized” (Becker 1949). Black propaganda, in other words, relies on deceiving an audience into believing that a distributed message derives from an opposing source to the actual one (e.g., an ally rather than an enemy). Both gray and black propaganda stand in contrast to white propaganda, which encompasses manipulation in which the actual source is known and visible. The conceptual vocabulary of white, gray, and black propaganda has been used extensively within the field of propaganda studies (Becker 1949; Ellul 1965; Daniels 2009a; Soley and Nichols 1987; Jowett and O'Donnell 2012). However, Daniels (2009a) argues, these concepts have a substantial downside due to their unfortunate racial connotations. Building on this critique, this chapter proposes the terms *identifiable* (white), *obfuscated* (gray), and *impersonated* (black) propaganda as an alternative to the long-standing, yet problematic terms.

Forms of disguised propaganda represent an innately challenging object of investigation due to the difficulty of untangling concealed sources and intentions (Jowett and O'Donnell 2012). In some cases, manipulated sources can only be studied retrospectively after historical documents surface (Soley and Nichols 1987). Yet, analysts can advantageously deploy a number of investigative strategies to determine the hidden identity of the propagandist. One such strategy relies on analyzing “the apparent ideology, purpose, and context of the propaganda message. The analyst can then ask, who or what has the most to gain from this?” (Jowett and O'Donnell 2012, p. 293). If analysts can establish the intended outcome of disguised propaganda, this will point to the underlying source. Studying the context and effects of propaganda are key in this regard. To Jowett and O'Donnell (2012), the hidden source will typically be “an institution or organization, with the propagandist as its leader or agent” (293). Using the conceptual vocabulary of Ellul (1965), disguised propaganda is thus first and foremost conceptualized as a form of vertical propaganda.

An early example of impersonated propaganda of agitation in mass media is *The Protocols of the Elders of Zion*, which was written by the Czar Nicholas II's secret police in 1903 and distributed through Russian newspapers (Jowett and O'Donnell 2012). On the surface, the text reveals a devious Jewish plot for world domination conceived by Jewish representatives at a secret congress. In reality, it is a deliberate fraud to promote anti-Semitism. Nonetheless, the text became influential in European politics, cited by Hitler in his infamous *Mein Kampf* and used in Nazi propaganda (Jowett and O'Donnell 2012). As such, it accompanied the *psychological warfare* of the Second World War.

Disguised propaganda plays a key role in modern-day psychological warfare, which encompasses “the use of propaganda against an enemy together with other operational measures of a military, economic, or political nature” (Linebarger 2010, p. 40). During both The Second World War and The Cold War, military units and intelligence agencies in countries such as Germany, the United Kingdom, the USA, and the Soviet Union all orchestrated large-scale disguised propaganda campaigns against their enemies (Becker 1949; Soley and Nichols 1987). Radio represented a particularly powerful medium in this regard, as it enabled fast and widespread dissemination of subversive content into enemy territories (Soley and Nichols 1987). Despite the effectiveness of clandestine radio, such propaganda posed great challenges to its creators, as it required both an elaborate orchestration of media technologies as well as “operatives thoroughly acquainted with every relevant aspect of the society and culture in question” (Becker 1949, p. 224).

The development of digital media technologies complicates the fundamental notion that disguised propaganda de facto derives from large-scale organizations through one-to-many communication channels. With digital media’s decentralized mode of content production and propagation, the number of potential sources has risen dramatically. This complicates existing analytical frameworks for identifying and analyzing sources of disguised propaganda. Nonetheless, the prominence of digital media should not be seen as the end of large-scale propaganda orchestration (see Auerbach and Castronovo 2013; Herman and Chomsky 2008).

Disguised Propaganda in Digital Media

Identity deception and disinformation have been studied since the early days of the World Wide Web. Some of the first to discuss the risks of online manipulation were scholars from information science, studying the internet’s role as an educational tool (see SantaVicca 1994; Tate and Alexander 1996). In other disciplines, scholars studied identity deception in Usenet groups (see Donath 1998; Dahlberg 2001) and the potential risk of the internet becoming a “disinformation superhighway” (Floridi 1996, p. 509). Steering away from a techno-determinism, Floridi (1996) argued that, although “[t]echnology sharpens the problems [of disinformation].. the fundamental questions remain human and social” (513). Deception and manipulation, in other words, might take new forms online, yet the underlying roots and causes would remain the same.

Dahlberg (2001) was one of the first to argue that deception represented a potential hindrance for the internet to ever become a space of democratic deliberation:

Many discussion groups, including those dedicated to ‘serious’ political issues, face the problem postings aimed to misinform, embarrass, self-promote, provoke, gossip, trivialize, and so on... Verifiable online evidence is often hardest to come by in cases where support for claims is most crucial... These verification problems can inhibit online interactions from realizing the deliberative conception where only ‘the force of better argument’ decides outcomes. (Dahlberg 2001, pp. 19–20)

Donath (1998) presents a similar argument, stating that deception was both common and harmful in digital media environments. To Donath (1998), limited identity cues online made deception particularly treacherous, as information “is more likely to be believed when offered by one who is perceived to be an expert” (Donath 1998, p. 31). Any user could deceive others by disguising their identity behind profiles or websites claiming to be trustworthy and authoritative. Accessibility and affordability of content production made deception much easier, as “documents, photographic evidence, and whole organizations can be readily fabricated” (Dahlberg 2001, p. 19). An early example of such deception strategies can be found on martinlutherking.org.

Martinlutherking.org, which was launched in 1999 (Thomson 2011), is a website deliberately constructed to promote white supremacy based on a difficult-to-identify source. At first glance, the website appears to be educational and scientific by claiming to provide “A True Historical Examination” of Martin Luther King. Nonetheless, the site (which is still active at the time of writing this chapter) one-sidedly portrays Dr. King as a rapist, communist, women-beater, and sexual deviant (Daniels 2009a, b). Drawing on the conceptual works from propaganda studies (as discussed in the previous sections), martinlutherking.org is a case of obfuscated propaganda, as the site does not clearly disclose its authorship. In 2008, Daniels conducted a pilot study in which she asked adolescent internet users to search for Martin Luther King on Google and find a suitable website for a school paper (Daniels 2008). The result of the study showed that numerous adolescents – including experienced internet users – found martinlutherking.org and were unable to identify the disguised authorship. A majority of participants concluded that the website would be a suitable source for a school paper.

Apart from being a case of obfuscated propaganda, martinlutherking.org is also horizontal propaganda, as the website is not created by a large-scale institution, but by an individual, Don Black – a former grand wizard of the Ku Klux Klan who funded the website through donations (Daniels 2009b). As noted, disguised propaganda in radio, newspapers, film, and television has historically been closely connected to large-scale organizations, as these channels required substantial resources. In digital media, this is different, as expenses for buying and maintaining a web domain is minimal in comparison to mass-mediated campaigns. This enables small groups or individuals to orchestrate campaigns, including propaganda of agitation. In the typology of Ellul (1965), horizontal propaganda of agitation is nonexistent, as individuals cannot orchestrate the necessary media technologies. Following Daniels’ (2014), however, digital media enable such propaganda due to low barriers of content production and proliferation. This makes the internet potentially powerful for individuals or groups seeking to further political agendas through manipulative means:

One of the many promises of digital media is that it opens up the possibility for multiple perspectives... If the wonder of the open Internet is that anyone can create and publish content online, it is also simultaneously the distress, as those who intend to deceive create and publish cloaked websites. (Daniels 2014, p. 151)

Daniels (2009a, 2014) uses the term *cloaked websites* to designate disguised propaganda on websites. Other notable examples of such propaganda promoting white supremacy are *The Institute of Historical Review* (Daniels 2009b; Foxman and Wolf 2013), *American Civil Rights Review* (Daniels 2009b), and *The Occidental Quarterly* (Mihailovic 2015). All these sites disguise their underlying political goals and ideologies. Racism, however, is not the only disguised agenda online. Various websites have used similar tactics. Teen Breaks is an example of a disguised, pseudo-scientific website aimed at convincing young pregnant women to renounce abortion (Daniels 2014). Makah.org was an impersonated (or black) propaganda website created by animal rights activists to discredit the Makah Indian Tribe for harvesting whales (Piper 2001). Gwbus.com was a parody website created by left-wing activists during the George W. Bush election campaign to deceive people into thinking it was an official website and to mock Bush (Foot and Schneider 2002). A majority of these websites are *horizontal propaganda*, as they do not derive from societal elites or powerful organizations. Yet, large-scale corporations have also orchestrated disguised campaigns through websites.

Astroturfing refers to persuasion campaigns orchestrated by organizations to give a false impression of public support for or against a specific topic, which serves their agenda (Leiser 2016). The term derives from *AstroTurf*, which is a brand of synthetic turf playing grass, thus highlighting the contrast between orchestrated support and actual grass roots movements (Zhang et al. 2013). Astroturfing is a form of *disguised, vertical propaganda* aimed at creating the impression of horizontal, political support. Notable early examples of astroturfing websites are *Working Families for Wal-Mart*, *The Center for Food and Agricultural Research*, and *Americans for Technology Leadership* (Leiser 2016). These organizations all claimed to represent independent advocate groups, yet were in fact funded and orchestrated by Wal-Mart, Monsanto, and Microsoft, respectively. These corporations tactically used the organizations to counter negative attention towards their brands and attack commercial and political opponents. Governments in countries such as China and Russia have in recent years used similar tactics on a much greater scale, relying on paid users to influence political discourse on social media (Tong and Lei 2013; Aro 2016; King et al. 2017).

All in all, digital media have complicated existing conceptualizations of disguised propaganda as de facto deriving from large-scale organizations. Yet, as the above examples highlight, it would be problematic to assume that digital media have erased vertical propaganda. Lines between vertical and horizontal propaganda seem increasingly blurred, as individuals, groups, and powerful organization can all potentially create and orchestrate disguised campaigns within the same online environments. Political and military organizations have systematically sought to take advantage of this situation, ushering in a new era of propaganda, surveillance, and censorship:

Civilian communication networks, including the Internet, are now fully intertwined with military communications, a situation that has led to networks being retooled for surveillance,

control and information warfare. These pressures are also eroding formerly distinct elements of media–public diplomacy–military relations. . . (Winseck 2008, p. 420)

The boundaries between national and global media systems, media producers and consumers, military operations and politics become increasingly fluid online. The following section seeks to examine this development, focusing on the global rise of social media – e.g., Facebook, Twitter, Instagram, Snapchat, and WeChat – and the continued evolution of vertical and horizontal disguised propaganda on these platforms.

Disguised Propaganda on Social Media

Social media are online platforms that enable large-scale proliferation of user-generated content based on many-to-many communication (Castells 2013). However, since all media technologies that support human communication can essentially be considered social, the term social media “obscures the unpleasant truth that ‘social media’ is the takeover of the social by the corporate” (Baym 2015, p. 1). During the last decade, the number of social media users have grown exponentially, with Facebook reaching two billion users in 2017 (Chaykowski 2017). As such, human interaction – whether in relation to political, cultural, or everyday life – increasingly takes place in social media environments. This development gives rise to new modalities of both vertical and horizontal propaganda, produced by propagandists and validated and amplified by users through comments, likes, re-tweets, and shares.

Corporate social media platforms have a profound influence on social relations, as they not only facilitate interactions but also actively shape them:

Sociality is not simply “rendered technological” by moving to an online space; rather, coded structures are profoundly altering the nature of our connections, creations, and interactions. Buttons that impose “sharing” and “following” as social values have effects in cultural practices and legal disputes, far beyond platforms proper. (van Dijck 2013, p. 20)

Researchers should consequently approach social media with attentiveness towards the interrelation between technological and social processes. This, however, is a difficult task, as the visibility of *how* social media influence social relations through algorithms and interfaces (and vice versa) has not become greater alongside their ubiquity (van Dijck 2013). Following this argument, disguised propaganda on social media should be seen as socio-technical phenomena arising at the intersection of social relations and digital architectures. In this context, user engagement is central, as social media content spreads through user networks. Studying disguised propaganda on social media thus requires researchers to closely examine the relationship between producers, audiences/distributors, and platform architectures.

In the context of horizontal propaganda, social media have lowered the cost of digital content production. Whereas websites (only) required the purchase and

maintenance of a web domain, social network sites (SNSs) are available to anyone with a working computer or smartphone with Wi-Fi access. This has opened up a new venue for individuals and small groups seeking to further agendas through manipulation. Cloaked websites, as a form of *obfuscated propaganda*, typically present content as serious and trustworthy, while concealing the website's authorship (Daniels 2009a). SNSs such as Facebook, which are based on personal profiles and the display of personal networks, are particularly well suited for *impersonated* forms of propaganda. Reliability and trust of a disguised social media profile is created by carefully constructing a false identity and maintaining it through posts that are validated through user comments, likes, and shares. A user who "likes" or "befriends" a disguised profile or page can thus potentially contribute to both its distribution and validation.

A popular definition of SNSs argues that their key characteristics are the ability to create a public or semipublic profile, make connections known, and view and navigate these connections (boyd and Ellison 2007). These authors later revised the connectivity function by including production of and interaction with streams of user-generated content (Ellison and boyd 2013). The profile itself can be defined as "a portrait of an individual as an expression of action, a node in a series of groups, and a repository of self- and other-provided data" (Ellison and Boyd 2013, p. 154). Similarly, conceptualizing social media more generally as "personal media assemblage and archives" (Good 2013, p. 560) allows us to consider the identity created through SNSs as central for analyzing disguised sources. Combining these characteristics, disguised propaganda on social media is: based on a (cloaked) identity created through a profile or page; a stream of user-generated content; and an identity that is continuously reproduced and negotiated in interactions between posts and comments. Moreover, disguised propaganda on SNSs is rarely permanent but exists in an interactive process of creation, deletion (due to violations of SNS platforms' terms of use), and recreation (Farkas et al. 2017).

One example of impersonated propaganda on social media is their use to distribute and amplify racist discourses concerning ethno-cultural minorities. In 2015, anonymous propagandists in Denmark successfully provoked users by constructing fake Muslim identities on Facebook, claiming that Muslims were plotting to kill and rape (non-Muslim) Danes (Farkas et al. 2017, 2018). Through 11 Facebook pages, propagandists attracted more than 20,000 comments from Danish Facebook users. The most commented page, which existed for less than four days before Facebook deleted it, attracted more than 10,000 comments. A majority of users who reacted to these cases of impersonated propaganda of agitation expressed aggression towards the pages as well as Muslims in general. Through hateful comments, the pages turned into sites of overt hatred and racism. Due to Facebook's design (which provides almost unlimited anonymity and security to page owners), the propagandists behind the fake identities were able to remain completely anonymous. This differs from cloaked websites where sources are obfuscated, yet often identifiable at closer inspection (Daniels, 2009a). On social media, it can be impossible to establish with certainty, whether individuals or an organized group created a page and posts, i.e., whether it is vertical or horizontal propaganda.

As stated, propaganda analysts can examine disguised sources and intentions by asking the basic question of “who or what has the most to gain from this?” (Jowett and O’Donnell 2012, p. 293). This analytical strategy is useful in the context traditional mass media, where disguised propaganda is often orchestrated by a limited number of large-scale organizations (Ellul 1965; Jowett and O’Donnell 2012). On social media, however, this investigation strategy is challenged. Determining “who gains the most” is difficult, when propaganda can potentially derive from a small partisan group, a large-scale organization, or even a single individual seeking to further an agenda or simply provoking others by *trolling* (Phillips 2012). This raises new epistemological challenges (Schou and Farkas 2016): How can we investigate disguised sources and intentions on social media? How does the credibility of a social media profile or page increase through its likes, shares, and comments? How can users become more critical of information streams produced by aggressive and hateful posts as well as antagonistic reactions? And how can we assess the magnitude and significance of disguised propaganda, when fake profiles can reach thousands of users within days, before social media companies delete them? These questions require urgent scholarly attention.

In the context of vertical propaganda, large-scale organizations take advantage of the decentralized structure of social media by orchestrating far-reaching campaigns that are nonetheless difficult to identify as such. Two vital components in this regard are the use of so-called *troll armies* and *social bots* for social media astroturfing (Benedictus 2016). On social media, astroturfing encompasses the orchestration of user profiles by an organization, such as a government agency or private corporation, to simulate public support or opposition towards a particular topic. This form of disguised manipulation can serve as both propaganda of agitation and integration, as organizations seek to consolidate power through attacks on perceived opponents as well as through the manufacturing of widespread support. Astroturfing can also rely on both obfuscated and impersonated sources, as organizations might pay users to post content from their own social media accounts or through networks of fictitious profiles. In practice, these modalities are often interconnected. In China and Russia, government agencies have orchestrated large-scale troll armies, in which people are paid to promote government agendas through social media profiles (Tong and Lei 2013, Benedictus 2016). In China, this has been coined the “50c party,” as users were rumored to receive 50 cents for each social media post they create in support of the government (King et al. 2017).

Large-scale organizations engage in social media astroturfing for a number of reasons. This form of disguised propaganda can potentially have widespread influence on public opinion and be an effective tool to silence critics through aggressive campaigns (Aro 2016). Astroturfing might also serve to divert public attention from contemporary crises by flooding social media with non-related content. This method, which relies on a “strategic distraction from collective action, grievances, or general negativity” (King et al. 2017), has been used extensively in China, where the government is estimated to orchestrate 448 million social media posts per year (King et al. 2017). This content is first and foremost produced by human laborers (King et al. 2017), yet astroturfing can also rely on social bots.

Social bots are user profiles controlled by software that algorithmically produce and disseminate content. During the 2016 US presidential elections, a large-scale study estimates that close to 20 percent of all content on Twitter concerning the elections was produced by social bots (Bessi and Ferrara 2016). Bots were found on both sides of the political spectrum, although a majority supported the Republican candidate, Donald Trump (Kollanyi et al. 2016). A key application of bots was to disseminate conspiracy theories and disinformation, popularly referred to as “fake news” (Shao et al. 2017). As of the time of writing, the US Congress is investigating whether some of this activity was orchestrated by Russian agencies (Wakabayashi and Shane 2017), but despite the potential political implications of these activities, it remains difficult to identify the sources behind automated propaganda:

Concluding, it is important to stress that . . . it is impossible to determine who operates such bots. State- and non-state actors, local and foreign governments, political parties, private organizations, and even single individuals with adequate resources . . . [could] deploy armies of social bots and affect the directions of online political conversation. (Bessi and Ferrara 2016)

As with all disguised propaganda on social media, platforms’ decentralized mode of content proliferation and potential anonymity provided for propagandists complicate both epistemological boundaries and empirical investigations of vertical and horizontal propaganda. This raises serious and urgent questions of accountability, transparency, and contestation of disguised propaganda – for scholars, users, policy makers, law enforcement, and (perhaps most importantly) the corporations owning these platforms. So far, social media companies have largely placed the responsibility for countering these phenomena on users. However, this strategy is not a viable solution to contemporary or future democratic consequences posed by disguised propaganda.

Countering Disguised Propaganda on Social Media

The vast popularity of social media platforms makes it difficult for companies, such as Facebook and Twitter, to identify and moderate problematic content. As a solution to this challenge, companies construct their policy enforcement principles around user engagement, often deploying commercial content moderators solely when users flag content for violations of company policies (Roberts 2016). Reimagining and reengineering this division of labor is a difficult endeavor:

The huge numbers of members that popular social media sites boast and the vast volume of content these members post make it impossible for the staff of the host companies to pro-actively monitor and edit the contents. As we’ve seen, the only way content guidelines - in particular, those related to hate speech - can be applied is through the active engagement of real people . . . Almost inevitable, this task falls mainly on the users of the social media sites. (Foxman and Wolf 2013, p. 106)

Identifying hate speech and disguised propaganda has to rely on human judgment, as algorithms cannot adequately analyze cultural contexts of each post (at least not yet). Due to the ubiquity of social media platforms, such human judgment has to derive from users. Following this argument, an encouraging solution to disguised propaganda could seem to be the formation of citizen groups, actively fighting propaganda by reporting fake pages and profiles to social media companies. Promising as this initiative may be, users can only superficially counteract disguised propaganda under current conditions (Farkas and Neumayer 2017).

There are many challenges involved in building alternative spaces to fight disguised propaganda on social media platforms. New forms of digital editing tools make it increasingly difficult to determine, if pictures and videos are manipulated. The decentralized structure of social media platforms makes it difficult to find and contest propaganda before it potentially reaches a wide audience. The biggest challenge, however, is the way in which social media companies place the responsibility for countering propaganda on their users, yet only provide limited and opaque opportunities for them to act. As a result, tactics to manipulate users become increasingly sophisticated, while collective resistance cannot.

The idea of empowerment of crowds acting and creating together has been present in early discourses about social media. Tim O'Reilly coined the term "Web 2.0" with one key component being the "wisdom of the crowds" (O'Reilly 2005). For social media companies, crowdsourcing became an effective marketing discourse, in which they present their platforms as spaces of participation, decentralization, spontaneous interaction, and lack of hierarchy – ideas hijacked from the radical left (Žižek 2009). In the case of fighting disguised propaganda, these ideas about social media shift the responsibility to the users. They, however, have to navigate limitations of architectures and policies provided by social media corporations. Instead of empowering activists, "power has partly shifted to the technological mechanisms and algorithmic selections operated by large social media corporations" (Poell and van Dijck 2015, p. 534).

On Facebook, users are provided only with a "report" button to notify the company of content violations (Farkas and Neumayer 2017). How Facebook processes these reports remains highly opaque. Consequently, users cannot know how or on what grounds Facebook takes action. Even if Facebook deletes a profile or page, the creators can typically remain anonymous and continue their work. This makes it incredibly difficult for users or authorities to hold anyone accountable. These challenges also complicate the work of journalists or researchers trying to study the implications of disguised propaganda, as a page or profile might reach thousands of users within days and then disappear without notice. To limit the potential contemporary and future threat of disguised propaganda, users should be able to identify, mobilize, organize, and collectively resist manipulation much more effectively. Although anonymity can be beneficial for democratic discussion in many ways, it is problematic for counter-action that creators of disguised propaganda can stay completely anonymous and avoid any consequences. For this to change, social media corporations need to be held accountable for countering propaganda on their platforms. In the current situation,

crowdsourced user actions mainly seem to serve as a diversion from corporate responsibility and questions of accountability.

Conclusion

Disguised propaganda has undergone a series of profound changes alongside technological developments throughout the twentieth and twenty-first century: from impersonated propaganda in early 1900s newspapers and pamphlets (e.g., *The Protocols of the Elders of Zion*) to clandestine radio during the Second World War, all the way up until present-day social bots and troll armies on social media. Alongside this significant evolution, scholarly contributions, such as analytical and epistemological frameworks, are continuously challenged. As this chapter has made apparent, digital media platforms complicate the fundamental notion of disguised propaganda de facto deriving from large-scale organizations. Additionally, digital media challenge existing conceptual boundaries, such as Ellul's (1965) conceptualization of vertical and horizontal propaganda. These technical developments, however, do by no means render these profound conceptual works redundant. Contrarily, revisiting concepts of propaganda studies (such as Ellul 1965; Sproule 1994; and Herman and Chomsky 1988) enables us to explore how disguised propaganda changes in digital and social media but also to outline their continuity across different media technologies. More scholarly engagement with disguised propaganda on social media is necessary to develop concepts at the intersection of internet research and propaganda studies. Research in this field should expand methodological, analytical, conceptual, and epistemological frameworks but also support resistance against disguised propaganda that produces hatred and racism. Scholars should not only strive to understand the development of propaganda but also challenge and contest manipulation and deception in contemporary and future online spaces.

References

- Aro J (2016) The cyberspace war: propaganda and trolling as warfare tools. *Eur View* 15:121–132. <https://doi.org/10.1007/s12290-016-0395-5>
- Auerbach J, Castronovo R (2013) Introduction: thirteen propositions about propaganda. In: Auerbach J, Castronovo R (eds) *The Oxford handbook of propaganda studies*. Oxford University Press, Oxford, pp 1–16
- Baym NK (2015) Social media and the struggle for society. *Soc Media + Soc* 1:205630511558047. <https://doi.org/10.1177/2056305115580477>
- Becker H (1949) The nature and consequences of black propaganda. *Am Sociol Assoc* 14:221–235
- Benedictus L (2016) Invasion of the troll armies: from Russian Trump supporters to Turkish state stooges. *Guard*
- Bessi A, Ferrara E (2016) Social bots distort the 2016 us presidential election online discussion
- boyd d m, Ellison NB (2007) Social network sites: definition, history, and scholarship. *J Comput Commun* 13:210–230. <https://doi.org/10.1111/j.1083-6101.2007.00393.x>
- Castells M (2013) *Communication power*, 2nd edn. Oxford University Press, Oxford

- Chaykowski K (2017) Mark Zuckerberg: 2 Billion users means Facebook's "Responsibility Is Expanding". *Forbes*
- Cunningham SB (2002) The idea of propaganda: a Reconstruction. Praeger Publishers, Sanra Barbara
- Dahlberg L (2001) Computer-mediated communication and the public sphere: a Critical Analysis. *J Comput Commun* 7(1)
- Daniels J (2008) Searching for Dr. King: Teens, race, and cloaked websites. In: Ennis E, Jones ZM, Mangiafico P, et al. (eds) *Electronic techtonics: Thinking at the interface*. Lulu Press, Durham NC
- Daniels J (2009a) Cloaked websites: propaganda, cyber-racism and epistemology in the digital era. *New Media Soc* 11:659–683. <https://doi.org/10.1177/1461444809105345>
- Daniels J (2009b) Cyber racism: white supremacy online and the new attack on civil rights. Rowman & Littlefield Publishers Inc, New York
- Daniels J (2014) From crisis pregnancy Centers to Teenbreaks.com: anti-abortion activism's use of cloaked websites. In: *Cyberactivism on the participatory web*, pp 140–154
- Donath JS (1998) Identity and deception in the virtual community. In: Smith MA, Kollock P (eds) *Communities in cyberspace*. Routledge, London, pp 22–58
- Ellison NB, Boyd DM (2013) Sociality through social network sites. In: Dutton WH (ed) *The Oxford handbook of internet studies*. Oxford University Press, Oxford, pp 151–172
- Ellul J (1965) Propaganda: the formation of Men's attitudes. Vintage Books, New York
- Farkas J, Neumayer C (2017) "Stop fake haete profiles on Facebook": challenges for crowdsourced activism on social media
- Farkas J, Schou J, Neumayer C (2017) Cloaked Facebook pages: exploring fake Islamist propaganda in social media. *New Media Soc*. <https://doi.org/10.1177/1461444817707759>
- Farkas J, Schou J, Neumayer C (2018) Platformed antagonism: racist discourses on fake Muslim Facebook pages. *Crit Dis Stud* 1–18. <https://doi.org/10.1080/17405904.2018.1450276>.
- Floridi L (1996) Brave.Net.World: the internet as a disinformation superhighway? *Electron Libr* 14:509–514
- Foot KA, Schneider SM (2002) Online action in campaign 2000: an exploratory analysis of the U.S. political web sphere. *J Broadcast Electron Media* 46:222–244. https://doi.org/10.1207/s15506878jobem4602_4
- Foxman AH, Wolf C (2013) *Viral Hate*. Palgrave Macmillan, New York
- Good KD (2013) From scrapbook to Facebook: a history of personal media assemblage and archives. *New Media Soc* 15:557–573. <https://doi.org/10.1177/1461444812458432>
- Hancock JT (2012) Digital deception: why, when and how people lie online. Oxford University Press, Oxford
- Herman ES, Chomsky N (1988) *Manufacturing consent: the political economy of the mass media*. Pantheon Books, New York
- Herman ES, Chomsky N (2008) *Manufacturing consent: the political economy of the mass media*. The Bodley Head, London
- Jowett GS, O'Donnell V (2012) *Propaganda and Persuasion*. SAGE, Los Angeles
- King G, Pan J, Robert ME (2017) How the Chinese government fabricates social media posts for strategic distraction, not engaged argument. GkingHarvard.edu. <https://doi.org/10.1017/S0003055417000144>
- Kollanyi B, Howard PN, Woolley SC (2016) Bots and automation over Twitter during the U.S. Election
- Leiser M (2016) AstroTurfing, "CyberTurfing" and other online persuasion campaigns. *Eur J Law Technol* 7:1–27
- Linebarger PMA (2010) *Psychological warfare*. Coachwhip Publications, Darke County
- Lippmann W (1946) *Public opinion*, vol 1. Transaction Publishers, New Brunswick/London
- Mihailovic A (2015) Hijacking authority: academic neo-aryanism and internet expertise. In: Simpson PA, Druxes H (eds) *Digital media strategies of the far right in Europe and the United States*. Lexington Books, Lanham, pp 83–102

- Milan S (2013) Social movements and their technologies: wiring social change. Palgrave Macmillan, New York
- O'Reilly T (2005) What is Web 2.0: design patterns and business models for the next generation of software. <http://www.oreilly.com/pub/a/web2/archive/what-is-web-2.0.html>. Accessed 6 Oct 2017
- Phillips W (2012) The house that fox built: anonymous, spectacle, and cycles of amplification. *Telev New Media* 14:494–509. <https://doi.org/10.1177/1527476412452799>
- Piper P (2001) Better read that again: web hoaxes and misinformation
- Poell T, van Dijck J (2015) Social media and activist communication. In: Atton C (ed) *The Routledge companion to alternative and community media*. Routledge, London, pp 527–537
- Roberts ST (2016) Commercial content moderation: digital Laborers' dirty work. In: Noble SU, Tynes B (eds) *The intersectional internet: race, sex, class and culture online*. Peter Lang, New York, pp 147–160
- SantaVicca EF (1994) The internet as reference and research tool: a model for educators. *Ref Libr* 19:225–236
- Schou J, Farkas J (2016) Algorithms, interfaces, and the circulation of information: interrogating the epistemological challenges of Facebook. *KOME – An. Int J Pure Commun Inq* 4:36–49. <https://doi.org/10.17646/KOME.2016.13>
- Shao C, Ciampaglia GL, Varol O, Jul SI (2017) The spread of fake news by social bots. In: ArXiv. <https://arxiv.org/abs/1707.07592v2>. Accessed 5 Oct 2017
- Soley LC, Nichols JS (1987) *Clandestine radio broadcasting: a study of revolutionary and counterrevolutionary electronic communication*. Praeger, New York
- Sproule MJ (1994) *Channels of propaganda*. EDINFO Press, Bloomington
- Tate M, Alexander J (1996) Teaching critical evaluation skills for world wide web resources. *Comput Libr* 16:49–54
- Thomson K (2011) White Supremacist Site MartinLutherKing.org Marks 12th Anniversary. Huffingt. Post
- Tong Y, Lei S (2013) War of position and microblogging in China. *J Contemp China* 22:292–311. <https://doi.org/10.1080/10670564.2012.734084>
- van Dijck J (2013) *The culture of connectivity: a critical history of social media*. Oxford University Press, Oxford
- Wakabayashi D, Shane S (2017) Twitter, with accounts linked to Russia, to face congress over role in election. *New York Times*. <https://www.nytimes.com/2017/09/27/technology/twitter-russia-election.html>
- Winseck D (2008) Information operations 'blowback': communication, propaganda and surveillance in the global war on terrorism. *Int Commun Gaz* 70:419–441. <https://doi.org/10.1177/1748048508096141>
- Zhang J, Carpenter D, Ko M (2013) Online astroturfing: a theoretical perspective. In: 19th am Conf Inf Syst AMCIS 2013, vol 4, pp 2559–2565
- Žižek S (2009) *Violence: six sideways reflections*. Profile Books, London



Today's Internet for Tomorrow's Cities: On Algorithmic Culture and Urban Imaginaries

40

Marcus Foth, Peta Mitchell, and Carlos Estrada-Grajales

Contents

Introduction	726
The Rise of Urban Science	728
Algorithmic Culture	732
Urban Imaginaries	736
Conclusions	742
References	743

Abstract

In cities, when combined with ubiquitous mobile media and location-based services, algorithmic culture has been seen to exacerbate the problem of software-sorted geographies, that is, a conjunction of code and space that algorithmically “orchestrates inequalities through technological systems embedded within urban environments” (Graham 2005, p. 562). The mediated geographies served to us via locative devices and urban media might, for instance, show us only the city an algorithm assumes we want to see.

This chapter examines some of the touch points between the software-sorted city and its citizens, looking at both sides: On the one hand, algorithmic curation and selection render automated variations of the city. On the other hand, there are opportunities to explore, tinkering with algorithmic culture to bring about a diversity dividend and increased innovation capacity in cities. In order to do so,

M. Foth (✉) · C. Estrada-Grajales

QUT Design Lab, Queensland University of Technology, Brisbane, QLD, Australia
e-mail: m.foth@qut.edu.au; c.estradagrajales@qut.edu.au

P. Mitchell

Digital Media Research Centre, Queensland University of Technology, Brisbane, QLD, Australia
e-mail: peta.mitchell@qut.edu.au

cities must provide appropriate interfaces. Such urban computing, urban informatics, and urban media interfaces include location-based applications on mobile phones used in the city as well as urban screens, public displays, and forms of media architecture, such as interactive media façades and installations.

The chapter is structured in three parts. It first offers a critical review of the relationship between the internet and the city and in doing so, it outlines the basic premises of big data analytics and algorithms in the context of urban informatics that have given rise to the new field of urban science. It then turns to the socio-cultural implications and issues arising from algorithmic culture. In the third section, we discuss urban imaginaries and novel ways that some of the software tools underpinning algorithmic culture in the here and now can also give rise to new practices of imagining the future city.

Keywords

Algorithms · Urban imaginaries · Smart cities · Algorithmic culture · Internet studies

Introduction

Since the mid-1990s, the relationship between cities and information and communication technology (ICT) has become increasingly profound and, as a result, has been the focus of study for scholars from different disciplines. The late William J. Mitchell, then dean of the MIT School of Architecture and Planning and author of the 1995 book *City of Bits: Space, Place, and the Infobahn* (Mitchell 1995), was influential in suggesting a notable relationship between place and technology at a time when mainstream interest was focused on the promise of Al Gore's coinage of the "Information Superhighway" (Hearn et al. 1999) and what Cairncross (1997) called the "Death of Distance." However, rather than a decline in the significance of place through services such as telecommuting, distance education, and e-commerce, the physical and tangible layers of the city started to mix with the digital layers of the Internet and online communications. The other seminal text that systematically examined aspects of this development and their impact on the spatial and social evolution of cities is Stephen Graham and Simon Marvin's (1996) *Telecommunications and the City: Electronic Spaces, Urban Places*.

Fast forward to today, utopian technology narratives elevate the idea of the "smart city" into mainstream interest and attention. Yet, not just for Internet studies scholars is it useful to appreciate that there are concerns with a vision that essentially equates a city with a computer system or a commercial corporation (Foth et al. 2016; Mattern 2017; Sassen 2015; Williams et al. 2009). This chapter will further unpack and add to these critiques with a specific focus on algorithmic culture and urban imaginaries.

Big data and the algorithms processing them have become a crucial building block in the smart city visions and narratives. Indeed, we live in a mediated world that is increasingly governed, judged, and served back to us by computer code,

algorithms, and data as the new raw material. The emergence of this new data-driven “algorithmic culture” (Striphias 2015) challenges the positive aspects of “participatory culture” espoused by Jenkins (2006) a decade earlier. Academic work in digital media, communication, and cultural studies has only just started to examine the side effects of technology-driven participatory culture. Although people contribute much of the data that algorithmic systems operate upon, those systems remain largely opaque “black boxes” closed off to public understanding, scrutiny, and control: Algorithms are, as Diakopoulos (2014) puts it, “the new power brokers in society” (p. 2). The technical systems and platforms that, at the beginning of the century, were heralded as enabling participation have downsides and consequences that are not yet well understood. Large data sets collecting user preferences and interactions inform the sorting and curation of digital content and news feeds on social media platforms such as Facebook and Twitter. Search results on Google and Amazon are equally shaped and ranked by these algorithmic filters. However, these developments have now started to grow beyond social media and affect cities and city life.

In cities, when combined with ubiquitous mobile media and location-based services, algorithmic culture has been seen to exacerbate the problem of “software-sorted geographies” (Graham 2005): a conjunction of code and space that algorithmically “orchestrates inequalities through technological systems embedded within urban environments” (p. 562). As Widmer (2016) explains, software sorting gives rise to “different regimes of visibility or invisibility of information” (p. 60) and, by extension, to differential geographies. The mediated geographies served to us via locative devices and urban media might, for instance, show us only the city an algorithm assumes we want to see.

This chapter examines some of the touch points between the software-sorted city and its citizens, looking at both sides: On the one hand, algorithmic curation and selection render automated variations of the city. On the other hand, there are opportunities to explore, tinkering with algorithmic culture to bring about a diversity dividend (Wood and Landry 2008) and increased innovation capacity in cities (Duranton and Puga 2000; Jacobs 1969; Ottaviano and Peri 2006). In order to do so, cities must provide appropriate interfaces (de Waal 2014). Such urban computing, urban informatics, and urban media interfaces include location-based applications on mobile phones used in the city as well as urban screens, public displays, and forms of media architecture, such as interactive media façades and installations.

The chapter is structured in three parts. It first offers a critical review of the relationship between the Internet and the city, and in doing so, it outlines the basic premises of big data analytics and algorithms in the context of urban informatics that have given rise to the new field of urban science. It then turns to the sociocultural implications and issues arising from algorithmic culture. In the third section, we discuss urban imaginaries (Cinar and Bender 2007; Huyssen 2008; Silva 2012) and novel ways that some of the software tools underpinning algorithmic culture in the here and now can also give rise to new practices of imagining the future city.

The Rise of Urban Science

Scholarly interest in data to study and understand cities is not new. Notable contributions predating the current interest stem from related fields such as cartography (Monmonier 2015) and epidemiology, such as the works of Charles Picquet in Paris in 1832 (Benoiston de Châteauneuf et al. 1834) and John Snow in London in 1854. Snow mapped a widespread cholera outbreak in Soho, located the source, and found that the disease was waterborne, which led to substantial improvements to not just London's water and sewage system but that of many other cities worldwide (Ball 2009).

Progress in the computational analysis of geographic and spatial data started to accelerate in the 1960s (Foresman 1998). Tomlinson (1969) is attributed with coining the term “geographic information system” (GIS). Advancements in both hardware and software coupled with the rapidly increasing rate of urbanization globally contributed to giving rise to the new practice of urban modeling (Batty 1976). Yet, at that time, the sources of urban data were limited in quantity, accuracy, and frequency compared to today. This situation changed dramatically with the introduction of ubiquitous computing, which not only saw technology spreading into all aspects of everyday life but also the ability to digitally record data thereof. Coupled with location-based services (GPS) and increasing computing power, Internet bandwidth, storage capacity, widespread uptake, and all at decreasing cost, more and more data was available for analysis (Press 2013). Additionally, the types of sources of data – not just of interest to urban studies but also sociology, cultural studies, and science – increased as well. Applications running on location-aware smartphones, particularly locative social media apps such as Foursquare and Facebook, produce a wealth of data that can give new insights into the urban condition (Gleeson 2014; Widmer 2016).

How do we distinguish between conventional data sets and “big data”? In 2001, the “three Vs” were used to describe three key distinctions (Laney 2001):

- **Volume:** Big data moves away from the previous necessity to limit data sets by using sampling methods to create a smaller subsection that is representative of a larger entity. Instead, the large quantity of generated and stored data allows for the interrogation of the entity itself. Example: Rather than sampling the travel behavior of a subset of public transport passengers using manual methods, the introduction of electronic ticketing, such as London's Oyster card, produces big data sets that represent all passengers using this system.
- **Velocity:** Electronic means of capturing, storing, and processing data afford faster and up to real-time speeds at which data is available for analysis. Example: Rather than printed timetable information being distributed and displayed at bus stops across a city, Real-Time Passenger Information (RTPI) systems use digital transmission of data to display public transport information, taking into account time and route changes due to delays or road closures.

- **Variety:** Data can be generated wherever there is computing equipment. This increases the diversity of formats, the number of different sources, and the spatial reach of data collection. Example: Rather than relying on induction loops embedded in the road, a city's public transport system can be analyzed using location data from GPS systems on board of vehicles, passenger data from RFID readers used to "tap on" and "tap off" electronic ticketing cards, CCTV security cameras, and even individual feedback passengers submit on social media channels such as Facebook and Twitter.

The three Vs were incorporated in this succinct definition (Mauro et al. 2016): "Big Data represents the Information assets characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value" (p. 122).

In addition to the three Vs, various commentators have argued for adding to this list (Altintas and Gupta 2016; Hilbert 2016), for example, **Veracity** to highlight questions of quality, accuracy, validity, and volatility; **Valence** to describe the complexity, connectedness, and density of big data sets; and **Value** to keep in mind the ability of the big data analytics to solve the problem at hand.

Introducing three interconnected layers provides another perspective of looking at big data analytics: First, there are the aforementioned technical aspects that enable generating, transmitting, processing, and storing big data, including hardware and software infrastructure such as sensors as part of the Internet of Things (IoT), cloud computing, data centers, visualization and analysis facilities, etc. Second, big data analytics requires expertise from mathematicians, statisticians, and computer scientists working on the algorithmic challenges of big data. This methodological layer comprises the interdisciplinary field of *data science* focused on the research methods, processes, and systems to extract knowledge, insights, and value from big data. And third, and perhaps closely tied with data science, are epistemological and ethical questions and concerns – and these add a rich and vital layer of criticality to big data analytics – from fields such as media and communication studies (Boyd and Crawford 2012), Internet studies and governance (Mayer-Schönberger and Cukier 2013), sociology (Burrows and Savage 2014), and geography (Graham and Shelton 2013).

Applying big data analytics to cities and urban contexts gives rise to the new field of *urban science* (Batty 2013a). This specific area of research and practice is sometimes also described by the term *urban informatics*; however, in this chapter, we subscribe to a broader scope and definition for urban informatics. The descriptions provided by Townsend in his foreword and by Foth in his preface to the *Handbook of Research on Urban Informatics* (Foth 2009) emphasize two key characteristics: first, the new possibilities (including real-time data) for both citizens and city administrations afforded by ubiquitous computing, and, second, the convergence of physical and digital aspects of the city. This is also incorporated into the following definition by Foth et al. (2011a):

Urban informatics is the study, design, and practice of urban experiences across different urban contexts that are created by new opportunities of real-time, ubiquitous technology and the augmentation that mediates the physical and digital layers of people networks and urban infrastructures.

Although the two are closely related, we also distinguish urban informatics from *urban computing* by suggesting that the former includes attention to the social and human implications of technology in cities – similar to the community and socio-cultural emphases of how community informatics and social informatics are defined (Gurstein 2007). Urban computing focuses more on technology and computing, while urban informatics emphasizes the relationship between urbanity, as expressed through the many dimensions of urban life, and technology.

However, starting in 2012 and fueled by the increasing popularity of commercial opportunities under the label of smart city and big data (Townsend 2013), subsequent definitions became narrow and limited in defining urban informatics mainly as big data analytics for efficiency and productivity gains in city contexts – unless the arts, humanities, and social sciences are added to the interdisciplinary mix (Thrift 2014). This specialization within urban informatics is sometimes referred to as “data-driven, networked urbanism” (Kitchin 2015) or urban science (Batty 2013a), and a range of new research centers focusing on urban science have been established since (Fig. 1).

Two technology and data-centric definitions of urban informatics:

The use of information and communications technology to better understand metropolitan needs, challenges, and opportunities. (Bays and Callanan 2012)

Urban informatics, understood as the capture of the soundings produced by all of a city’s connected devices and the application of data from those devices analysed in various ways. (Thrift 2014)

This narrow view prominent in the new field of urban science was met with criticism by many scholars and commentators calling for a broader perspective that included not just the views of city officials but citizens. They suggested a shift in focus from the smart city to smart citizens (Foth et al. 2015, 2016; Hemment and Townsend 2013). Batty included both aspects – the narrow focus on data analysis and the wider focus on citizen participation and engagement – in his definition of urban informatics:

Urban Informatics is loosely defined as the application of computers to the functioning of cities. In its narrower focus, it pertains to the ways in which computers are being embedded into cities as hardware and as software so that the routine functions can be made more efficient, not only through automated responses but through the data that such computation generates which is central to policy analysis. This narrow focus is on control. In its wider focus, it is concerned with the use of computers and communications to enable services to be delivered across many domains and to enable populations to engage and interact in policy issues that require citizen participation. (Batty 2013b)

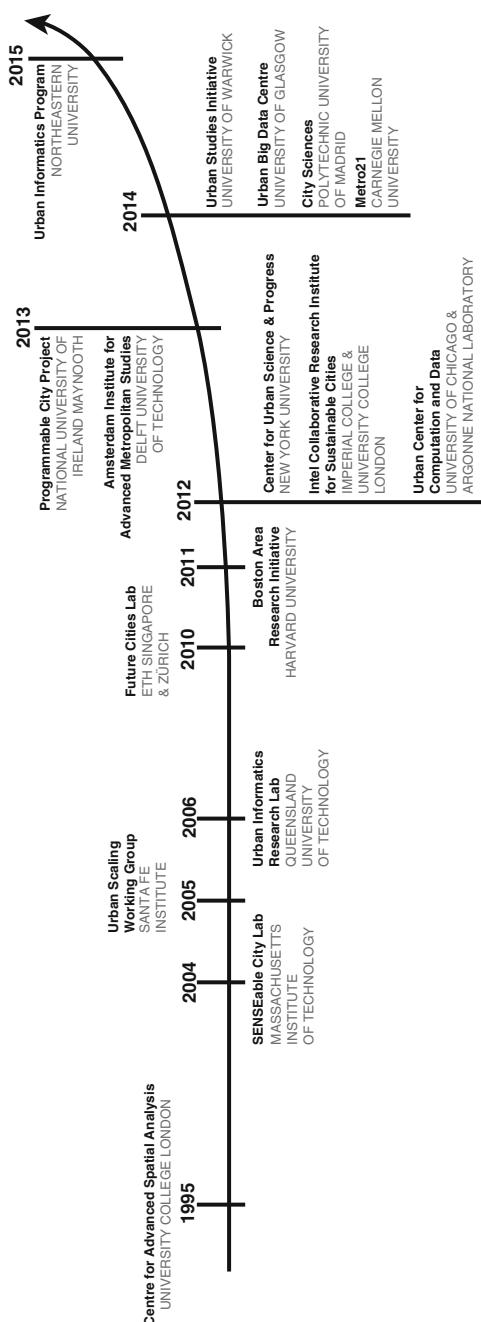


Fig. 1 Timeline of research centers that focus on urban science, urban informatics, and related research (Townsend 2015)

Kitchin (2016) views urban science and urban informatics as separate but complementary fields that often intersect. He provides a useful definition in his primer of urban science that distinguishes it from the broader scope of urban informatics (and urban interaction design).

Urban science is an interdisciplinary approach that practices and promotes a scientific and computational explanation of city systems and the processes of urbanization. It uses statistical analysis and data analytics – including machine learning, data mining, visual analytics, modelling and simulation – to identify causal relationships and predict how city systems work. (Kitchin 2017b, p. 2)

In this primer, Kitchin is sensitive to carefully acknowledge criticism of urban science. The positivistic roots of the discipline clash with the often sociocultural constructivism leaning epistemological foundations of other urban studies disciplines. The helicopter or bird's eye view picture of the city rendered by urban big data analytics may be of higher fidelity than what was possible at the time of Robert Moses and Jane Jacobs in the 1960s. Yet, systemic limitations and issues remain, such as the questionable belief that instrumental rationality, quantitative methods, and technological automation will solve all urban problems.

Urban science has thus far failed to recognize that cities are complex, multifaceted, contingent, relational systems, full of contestation and wicked problems that are not easily captured or steered, and that urban issues are often best solved through political/social solutions, policy interventions, and citizen-centred deliberative democracy rather than technical fixes and technocratic forms of governance. (Kitchin 2017b)

The recognition that a city is not a computer (Mattern 2017) requires the artful reconciliation and integration of the systems perspective (usually, “from above”) with the human perspective (usually, “from below”). A consequence of such an act of reconciliation may in fact be a reversal of the top-down/bottom-up dichotomy altogether (Fredericks et al. 2016). However, before we do so let us look at another crucial component of the software-sorted city: algorithms.

Algorithmic Culture

In 2006, *TIME* magazine published a picture of a computer on its cover as the “Person of the Year” with the words “*You. Yes, you. You control the Information Age. Welcome to your world.*” The selection highlighted the profound shift in the way that the World Wide Web has advanced to allow an increasing number of everyday people to not only access information, but contribute and participate in their own right. This trend has been popularized as Web 2.0, or the social media revolution (Hardey 2007) – Jenkins (2006) coined the term, “participatory culture.” The ability for everyone to become a creator, publisher, remixer, recommender, sharer, and referrer has led to an exponential growth in content: Every 60 s on Facebook, 510 comments are posted, 293,000 statuses are updated, and 136,000 photos are

uploaded (thesocialskinny.com, 2015). However, quantity of content does not imply quality, and thus with more sources of content, spread via more digital media channels, to more people, web users started to face the problem of information overload.

Corporations such as Facebook and Google employed sophisticated filters and recommendation systems designed to help us navigate the otherwise bloated social mediascape. The content displayed on Facebook's news feed is selected based on a user's profile, their location, interests, habits, and online transactions – what they post, share, recommend, and “like.” The popularity of social media stems from its power to create personalized spaces, walled gardens, which are tailored to individual preferences and favor content relevant to each user. An algorithm proprietary to each social media site determines what is deemed relevant: With the absence of a journalistic or editorial code of ethics, these algorithms determine the makeup of the Facebook news feed, Google's top search results, and the recommendations on whom to follow on Twitter and what to buy on Amazon. They are optimized to prioritize content that will generate more traffic.

Lotan (2014) warns that:

We're not seeing different viewpoints, but rather more of the same. A healthy democracy is contingent on having a healthy media ecosystem. As builders of these online networked spaces, how do we make sure we are optimizing not only for traffic and engagement, but also an informed public? . . . The underlying algorithmics powering this recommendation engine help reinforce our values and bake more of the same voices into our information streams.

The compounding aspects of this polarization of opinions – also referred to as echo chambers and filter bubbles – have been studied in political science (Andris et al. 2015), media and communication studies (Aiello et al. 2012; Dvir-Gvirsman 2017), and journalism (Pariser 2011).

From a cultural studies perspective, Striphas (2015) has coined the term we use for this section, “algorithmic culture,” in an article where he traces the lineage and dissects the contributions of three broad concepts, that is, crowd, information, and algorithm. He posits that, “algorithms are becoming decisive, and [. . .] companies like Amazon, Google and Facebook are fast becoming, despite their populist rhetoric, the new apostles of culture” (p. 407). He illustrates his argument with two examples that may also be useful here to cite in order to problematize the role of algorithms in society. The first occurred early in 2009. It transpired that over 57,000 book titles with gay and lesbian themes had suddenly been excluded from Amazon's sales rankings, searches, and bestseller lists. In response to inquiries from upset authors, customers, readers, and the media, the online retailer attributed the mistake to a cataloguing error caused by a member of staff in France who changed the value of a single database variable – “adult” – from false to true. This resulted in all book titles associated with this metadata to be removed from show. Amazon rejected any accusations of homophobia and downplayed the case as a glitch: “Mistakes do happen at Amazon.com – we're all human” (James 2009) – yet a glitch globally amplified by algorithmic systems.

The second example is from 2011 relating to the Occupy Wall Street movement. On 1 October, 700 activists were arrested at an incident on Brooklyn Bridge. Yet, even on that day, with high traffic of tweets, the hashtag #occupywallstreet never showed up in the official “Trending Topics” list issued by Twitter (Albright 2011; Gillespie 2011). Twitter sought to provide various justifications why #occupywallstreet never trended, such as the hashtag itself not being novel or the volume of traffic using the hashtag not amounting to a peak incline steep enough to warrant inclusion in the list of trending topics. Yet, rebuttals of these excuses appeared, rendering the real reasons mysterious (Albright 2011).

What these examples nicely illustrate is the difficulty with which scrutiny can be applied to these algorithms. Dourish (2016, p. 6) refers to this as “algorithmic opacity.” (Prof. Paul Dourish gave the *Miegunnyah Distinguished Visiting Fellows Lecture* at the University of Melbourne on 23 Feb 2016 on the topic of “The Social Lives of Algorithms.” The lecture recording is available here: <http://www.eng.unimelb.edu.au/engage/events/lectures/dourish-2016>.) Synthesizing his account of the manifold issues and challenges we face in algorithmic culture, he proposes three directions or lessons to be drawn. The first one is to “pair analyses of algorithms with analyses of the various phenomena of data – data items, data streams, and data structures – upon which they operate and in relation to which they are formulated” (p. 8). This related to the aforementioned call to add the notion of valence to the practice of big data analytics. Second, Dourish calls attention to “algorithmic identity,” that is, new ways for algorithms to be isolated and examined – yet, he also cautions, similar to Gillespie (2012), that this may also require dealing with digitally identical algorithms with multiple embodiments in different corporations or platforms. And third, Dourish points out the temporalities of algorithms – both the processes enacted by them and their own evolution and versioning.

Our experience of the city is increasingly underwritten by the algorithmic culture that Striphas identifies and the complex “cultural arbitrage” that these algorithms perform (Finn 2017, p. 12). As Rabari and Storper (2015) have argued, the city has developed a “digital skin” generated by the ubiquity of sensors, mobile media, and automated user data. The city’s digital skin is, they continue, “heavily structured by the algorithms, presentation styles, search channels and economic incentives” of private-sector actors such as Google, Facebook, Yelp, and Twitter, which “alter our experience of the city by augmenting, annotating, indexing and filtering ‘reality,’ much in the same way that the Google page algorithm influences the use of information” (p. 32). The urban media, platforms, and technologies feeding into this urban digital overlay, moreover, are largely predicated on location-based services and on the sharing of location information or geodata. These are, as researchers in recent years have pointed out, no longer simply “media,” but “spatial media” (Leszczynski 2015) and “geomedia” (McQuire 2016).

The emergence of geomedia, as Mitchell and Highfield (2017, in press) explain, parallels that of algorithmic culture: with the emergence of the “geoweb” in the mid-2000s and the rise to ubiquity of mobile and locative media, “geoharvesting and geofiltering have become key processes in the workings of algorithmic culture” with “critical implications” for how everyday users of digital media “see, can understand,

and navigate the physical world around them.” Rabari and Storper (2015) point to the ways in which “a geo-tagged map or an algorithmically organised index may create ‘filter bubbles’ and an unintended, but still very real, virtual segregation or, its extreme opposite, herd effects that end up limiting diversity and creating the ‘Hotelling effect’ on a massive scale within the space of the city” (p. 35) – the same “software-sorted geographies” that Graham (2005) identifies and that Widmer (2016) invokes in her study of the algorithmically produced places and spaces of Foursquare.

These algorithmic geographies, furthermore, are bound up with processes of urban governance and are thoroughly implicated in the smart city agenda and its complicated temporalities. Coletta and Kitchin (2017) draw our attention to the ways in which smart city technologies are not only reshaping the production and governance of urban space and urban mobility but also how they are regulating and reconfiguring the city’s “polymorphic” temporalities (p. 1). They identify within the smart city paradigm a form of “algorhythmic governance,” in which “algorithm machines” are used to actively measure, monitor, manage and control populations and the space-times of cities” (p. 7). Through its privileging of real-time flows of urban data, smart city governance generates a complex temporality. Focused on eliciting, curating, and mining these real-time flows, the smart city exists in kind of perpetual but predictive and future-focused present – one that operates alongside but is “difficult to attune” to the city’s “institutional and historical ‘heartbeat’” (Coletta and Kitchin 2017).

Taking this further, Leszczynski (2016) argues that the algorithmic governance of the “‘real-time’ smart city” is a form or even defined project of “future-ing” that “anticipat[es] particular kinds of cities-to-come” and that attempts to control for “the unfolding of undesirable urban futures” by containing or deflecting identified risks and by regulating subjects and spaces within the urban environment (pp. 1692, 1701). Algorithmic governance is, she adds, fundamentally “speculative” as a form of urban securitization, but it is far from utopian. “Insofar as (urban) big data look to the future,” Leszczynski (2016) writes, “it cannot but anticipate socio-spatially stratified cities,” for “the material realities of the ways in which uneven urban geographies propagate through and are projected onto the array of possible futures via enactments of algorithmic governmentality operationalized in and across city spaces destabilizes utopian narratives of urban big data solutionism” (p. 1703). Leszczynski’s vision of the securitizing forces at play in the speculative, “future-ing” project of smart urbanism is more pragmatic than it is dystopian – the smart city paradigm merely projects “forward in time and space” the inequalities and uneven geographies that have always typified urban life (p. 1704). In this sense, however, although it is future focused, smart urbanism is less an imagination of what might be than it is a regulatory projection of the present onto the future and a preemptive guarding against uncertain or undesirable futures.

In the following section, we map out a more citizen-focused approach to engaging with the data-driven city and its algorithmic geographies. This approach, grounded in theories of citizen co-production and the importance of citizens’ “urban imaginaries,” cannot sweep away the uneven geographies that are continually inscribed

and reinscribed through the data-driven imaginaries of smart urbanism and algorithmic governance. Nonetheless, it can, as we argue, give rise to new practices of imagining the future city that may at the micropolitical level, at least, speak back to or ameliorate the worst excesses of the software-sorted city.

Urban Imaginaries

In 1970, a couple of years after the publication of his book *Le droit à la ville*, Henri Lefebvre extended the concept of the citizen's right to the city to the right to its information. Lefebvre expressed his concern about the automatization of information and communication practices in urban contexts. In particular, he questioned the extent of ownership citizens may have when the overlap between the "language of the city" and the "language of machines" translates into "a weapon for those in power" (Lefebvre 1970, p. 59). To Lefebvre, the control of the means of production of the city, in the shape of media, information and communication technologies, and data, was crucial in order for citizens to shape the city according to their "heart's desire" (Park 1967, p. 3). Recently, Shaw and Graham (2017) followed the same narrative thread when questioning the status of Google as the "world's most powerful mediator of information" (p. 907). Google, warned the authors, implies a power paradox: It allows citizens quick and convenient access to information – running in parallel with big data's "three Vs" – although the way such information is curated, organized, and presented is dominated by a kind of algorithmic veil.

In the midst of the conundrum exposed by Shaw and Graham, it becomes imperative to examine how the city, although a disputed scenario (Sassen 1996), is also interpreted as a possibility for the reconciliation of forms of city production beyond the top-down/bottom-up dichotomy (Fredericks et al. 2016). In the panorama outlined by the current penetration of the smart cities' discourse as a dominant conceptual and practical referent, the emergence, use, and appropriation of technologies have shaped "the imaginaries and practices of a myriad of actors concretely building the city" (Söderström et al. 2014, p. 307). The imaginaries mentioned by Söderström et al. refer to "storytelling ideological constructs," mostly used by corporations like Google (Shaw and Graham 2017), to convey a positive discourse of social prosperity and technological advancement. But also, are appropriated and re-signified by lay citizens in the process of co-producing the city (Estrada-Grajales et al. 2018). What we posit here is that the design, production, and use of current technologies, materialized in software, media contents, mobile devices, and ubiquitous data producers, effectively shape in various ways how urban residents experience the city (Gordon and de Souza e Silva 2011). One of the major repercussions is the ability of those citizens to produce and hack information about their own urban environment (Foth et al. 2015; Goodchild 2007). In other words, facilitated by the technologies present in the so-called algorithmic culture, urban residents can become city co-producers who are imagining, communicating, and shaping the city they desire.

We use – building upon Silva (2006, 2012) and Cinar and Bender (2007) – the concept of urban imaginaries as narrative mechanisms used by citizens to envision the city. Departing from the principle that “our urban world has been imagined and made then it can be re-imagined and re-made” (Harvey 2003, p. 941), we consider urban imaginaries as strategies used to co-produce the city as lived urban space (Westwood 1997). Urban imaginaries constitute a still unperceived, but enormously powerful angle to understand how citizens (Iveson 2013), as well as other urban actors such as local governments and NGO, shape and be shaped by the city (Taylor 2004) – rather than the right of placemaking and citymaking to be outsourced to algorithmic agents. Yet, more important is how urban imaginaries represent a potential for reshaping the form in which traditionally the city has been produced. In fact, by researching on the imaginary construction of urban space, the possibility of a “future-tense” city, based on citizens’ dreams and desires, as well as their experiences, memories, and projections, stands as a challenge of the traditional, and already questioned, mechanisms for civic engagement and political participation in urban environments, especially in the domain of urban planning and governance (Byrne and Osborne 2016; Goodspeed 2016). Both Van Hulst (2012) and Odendaal (2006) suggest that storytelling, as an example of the different sources, techniques, and methods dealing with “soft data,” should be considered as an alternative to conventional quantitative models that historically have marginalized the “pedestrian view” discussed by Jacobs (1969). Urban imaginaries thus allow us to explore the production and appropriation of mechanisms that enable a citizen-led representations of the city and, also, to enhance current forms of citizen engagement when designing the future city.

In this process of collective city co-production, different technologies (e.g., devices, platforms, apps, and interfaces) help to leverage the crafting of “oral histories, storytelling, and poetry” (Odendaal 2006) among other forms of representation that inform shared urban experiences. Kelley (2013), for instance, argues that geosocial data, produced and collected by citizens using simple mobile apps such as Foursquare, enables an examination of “accurate representations of the local collective socio-spatial imaginary,” that is, “the ways that we perceive, experience and interact in space” (p. 181). Kelley’s example is far from being the only opportunity to evidence how Internet technologies are designed, used, and appropriated to enable an imaginary co-production of urban environments. The range is wide and varies from the type of interface and modes of interactions and engagements to the kind of issues they target and the capabilities they provide to their users. Since the task to analyze every single app, platform, or software that enables users to convey the city they are imagining goes beyond the scope of this chapter, we present a short review of **three** different groups of existing tools and technologies. The **first** group enables basic user engagement. The **second** group allows for idea generation among their users. The **third** group offers users visualization opportunities.

In order to review these three groups, we have put together basic criteria framed by four dichotomies, laid down to help us understand how such technologies facilitate the generation of citizen-led urban imaginaries:

- **Individual – Collective:** Are these technologies facilitating individual or collective urban imaginaries?
- **Sharing – Co-creative:** Are these technologies limited to sharing data, or are they facilitating co-creative engagements?
- **Appropriated – Crafted:** Are users of these technologies adapting prestructured tools or crafting new capabilities according to their own needs?
- **Tokenistic – Empowering:** Is the outcome of using these technologies truly empowering for their users or, on the contrary, just a tokenistic tool?

The idea of relying on technologies to facilitate citizen engagement in shaping the city is not new. As part of the **first** group of tools we explore, we review a Fix-o-gram app, as well as a digital platform, as examples of technologies designed to recognize the role of users as data providers but that fall short in reshaping how citizens imagine and envision the future city.

Foth et al. (2011c) reported on a Fix-o-gram app deployed in Brisbane, Australia, in 2010. By using this Fix-o-gram app, citizens could identify, visualize, and report a number of issues affecting the city's built environment. The app also allowed local government agencies to locate, quantify, and simplify citizen's requests. Communication between the stakeholders occurred in two directions: users creating data and reporting it to city authorities, on the one hand, and the same authorities reporting on the actions taken to remediate the reported issues. In a similar fashion, *CitySourced* (<http://www.citysourced.com/>) is presented as a platform that allows citizens to identify civic issues, such as potholes and graffiti, and report them in real time to their local government. For local authorities, *CitySourced* represents a mechanism to manage services and improve accountability, keeping citizens up to date on how their issue is being handled. By using mobile technology features embedded in mobile phones, citizens can take photos of public safety, quality of life, and environmental issues so government understands the nature of the problem. With GIS, government can identify the exact location of the problem. The ability of *CitySourced* to integrate into existing systems means government staff do not have to learn a new process or spend extra time updating another system.

Both these tools are limited for imagining the future city. To start, the Fix-o-gram app and *CitySourced*, at least in its first stages, focus on individual generation of contents, rather than allowing collective participation in civic matters. The tools help users to report on present urban issues, but do little to encourage the interchange of ideas or to generate opportunities for alternative forms of engagement with civic matters. Both examples illustrate a rigid communication structure between the different stakeholders. Although they may contribute to simplify the process for engaging citizens into caring for their urban environments, not much room is left for challenging “approaches [that] tend to focus heavily on quantitative data such as population reports, surveys, census data, demographic tables and figures, and other statistics” (Foth et al. 2011b, p. 1).

The **second** group of technologies offers more and deeper tools and services for users to work together toward the generation of common ideas about the city.

However, these technologies also represent a minor progress when it comes to facilitating citizens to challenge current forms of imagining the future city.

Following an extensive trajectory of facilitating and encouraging citizen engagement in civic matters in New Zealand, the *Enspiral Network*, (<https://enspiral.com/network-overview>) a collective of interaction designers and activists that produce online-based collaborative tools, developed *Loomio* (<https://www.loomio.org/about>) as an open-source software that facilitates collaborative decision-making in the context of organizational change. *Loomio* is designed to assist preestablished communities, such as corporate boards and committees, cooperative groups, government, and community organizations, with several tasks including proposal creation, multi-partner discussion rooms (via Slack), scheduling, and polls. Although *Loomio* is presented as a worker-owned cooperative social enterprise and charges a fee for the use of their full suite of tools, the software has been appropriated in different organizational-based scenarios. An example that illustrates how organizations use these technological platforms to imagine their future environments is the case of “Democracia Sociedad y Desarrollo” Movement in Venezuela (<http://dsdvzla.com/>), which used *Loomio* to organize their political agenda, to democratize internal decision-making, and to reach out to community members interested in reflecting and proposing alternatives for the current political scenario lived in South America.

The same *Enspiral Network* launched *ActionStation*, (<http://www.actionstation.org.nz/>) a digital community that claims providing opportunities for “like-minded people” to connect and to enable citizens to “hold decision-makers accountable” (ActionStation 2016, Sect. About) for their public responsibility. With the purpose of helping community members to voice up and get empowered, *ActionStation* presents itself, similar to other examples such as *GetUp* (<https://www.getup.org.au/>) in Australia, as a platform for online actions including petitions, social media swarms, and mass emails. Although *ActionStation* is mostly oriented toward individuals and community networks interested in holding government agencies to account, the issue of content ownership within the community is unclear. *ActionStation* actions are selected, curated, and prioritized by an internal review panel, which poses a question over the extent of autonomy users have to pursue their campaigns. However, what appears to be an insignificant descriptor of these digital platforms developed by *Enspiral Network* exposes a relevant issue in terms of the engagement orientation both *Loomio* and *ActionStation* provide to their users. As noted above, the developers promote these platforms as encouraging “like-minded people” to get together in order to imagine, plan, and act for their desired future. Rather than offering an invitation to embrace antagonistic, dissenting, or dialectic perspectives, these platforms are developed and used under the assumption that our urban societies should be imagined, and hence co-produced, in a homophilic exercise (Aiello et al. 2012). The aftermath of imagining the city, and by extent the society in general based on homophilic principles exclusively, is that social inclusion and free interchange of dissimilar ideas become limited. Our cities, thus, could be in danger of not transforming into those “spaces of encounter” imagined by Lefebvre (1968), where citizens learn and actively embrace diversity as a cohesive principle of the urban life (Matejskova and Leitner 2011; Valentine 2008).

Enspiral tools facilitate individuals to get together, plan actions, and organize resources for collective projects that may reveal the type of society they imagine. Although *Loomio* and *ActionStation* seem to provide an ecosystem of software tools to help citizens managing their projects, there is no trace of innovative tools in terms of enabling users to co-create visions, reassemble contents, and materialize their ideas. *Enspiral* tools have been appropriated by users as project management platforms, who have adapted the tools provided according to their own needs. Finally, it is hard to review how *Loomio* and *ActionStation* empower their users to reshape their practices for imagining the future of their city. However, in terms of reshaping the ways in which lay citizens narrate, convey, and visualize their own imaginaries, these tools do not offer much of innovation.

Finally, the **third** group of technologies we review here exemplifies the tools that, despite many not being utilized in decision-making and governance-related scenarios, present new opportunities to reflect on innovative ways to underpin algorithmic culture and enable new practices of imagining the future city. The emphasis relies in the capability of these tools to challenge current mechanisms used to grasp, interpret, and satisfy the diversity of visions contained in our urban environments. What these tools have in common is that they enable users to speculate with the city, its features and principles, and, in turn, allow them to convey the city those users dream off.

In 2013, New York-based artist, Brian Foo (<http://brianfoo.com/>), created *Continuous City* (<http://continuouscity.com/>), a multimedia project that seeks to transform the physical shape and configuration of New York's most iconic buildings. The creative project behind *Continuous City* includes a printed book, in which two fictional characters explore fictional and alternative arrangements of the city's built environment. In addition, the *Continuous City* website offers users an interactive component where they can create, narrate, and share their own versions of New York, gathering inspiration from city map generators, such as *Cityographer* (<http://cityographer.com/>), quite popular in the area of digital gaming (Kelly and McCabe 2007). In 2012, Foo developed a previous intervention called *Cities of you* (<http://citiesofyou.com/>), in which Foo imagines, draws, and describes fictional cities, as well as provides a glimpse of some of their urban features and characteristics of their inhabitants. His aim is to foster the ability “to imagine relationships as dynamic spaces in which one can visit, walk through, and explore” (Foo 2012, Sect. Home). Cities like *Maccioli*, depicted in Fig. 2, are conceived in collaboration with users who established communication with Foo during his creative process.

On a different shore of the creative realm, Emily Craven, an Australian creative author and producer, developed *Story City* (<http://www.storycity.com.au/>) as a digital storytelling platform that “combines fictional choose-your-own-adventure style stories with physical locations, allowing the fantasy to become ‘real’ to the reader” (Craven 2015, Sect. About). *Story City* enables users to produce their own content in the shape of fictional stories developed in real location throughout urban spaces. Furthermore, the platform allows non-creator users to engage with the stories,

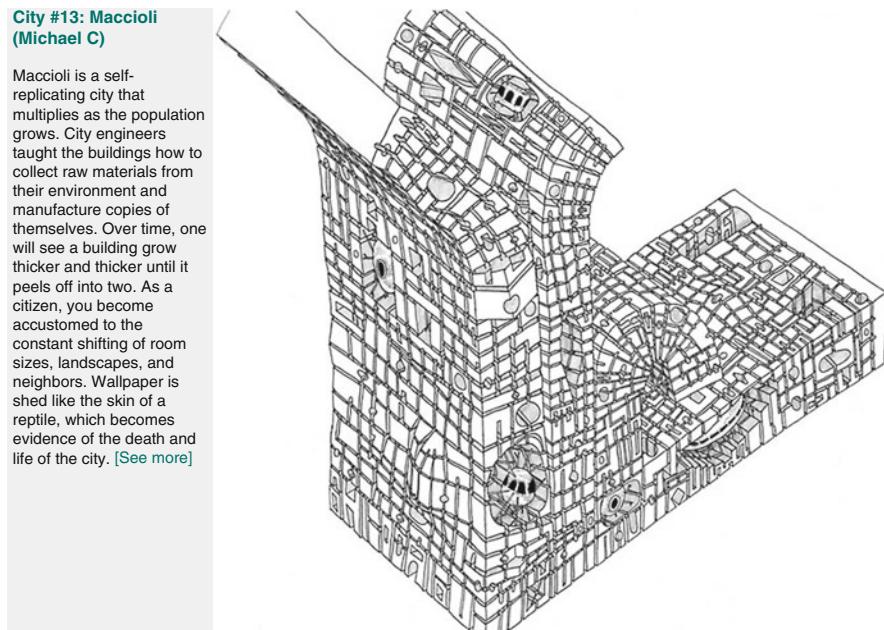


Fig. 2 City of Maccioli, a fictional city that multiplies at the same rate as its population

configuring an innovative form of experiencing the city from the imagination of others.

The exploration of fictional scenarios has always been in direct relation with the imagination of potential futures. From fantastic worlds of classic literature (Manguel and Guadalupi 1999) to utopian cities portrayed on sci-fi movies (Duarte et al. 2015), we are constantly speculating how our world could be closer to the one we desire. This is the principle followed by members of the Mobile Life Centre in Stockholm, Sweden, who applied methodological principles of *design fiction* to reimagine the IKEA catalogue (Brown et al. 2016). The aim of this design intervention is to discuss, experience, and challenge the perception of present time issues while imagining and visualizing potential futures. Although the catalogue is not a technological item itself, it is a design tool that explores how everyday technologies may be embedded in people's life. The catalogue depicts everyday scenes of futuristic environments and tech products, with the characteristic fashion utilized by IKEA in their advertising catalogues. What the Mobile Life Centre research team manages to produce with the IKEA catalogue is to provide a visual glimpse of a very tangible, although still potential, future scenario. However, the catalogue itself is not a sci-fi product, as it stands as the result of a reflection process among the team members and study participants who convey and articulate their own visions of the future and how a company like IKEA may provide a readily accessible genre – the catalogue many people are familiar with – to portray such imaginaries.

Conclusions

The technologies we review above serve as examples of how our relations and interactions with our urban environments are mediated by the coexistence and intertwining of digital and physical domains. We have also discussed how such technologies enable different levels of engagement between individuals and collectives who come together to materialize a vision of the future city. In these technologies we found examples of possibilities for sharing and co-creation, as well as opportunities for users to be empowered in the process of shaping new practices of imagining the future city. What we want to highlight, however, is that not many of these examples challenge current mechanisms of identifying and revealing the type of space that fits citizen's desires and needs. That is, a number of the digital tools and interventions surveyed certainly work implicitly to unsettle the supposedly "neutral" and "objective" algorithms of behemoths such as Google Maps that threaten, as Shaw and Graham (2017) argue, to "become a hegemonic order of consensus for the broader urban population, spelling a death-knell for the enunciation of dissent" (p. 914).

By dint of the fact that these tools – by and large, and particularly the ones focused on crowdsourced urban data – engage algorithms in the kind of placemaking work that they perform and enable, they remain entangled in the shift to algorithmic urbanism and governance. While they may not be as ethically compromised as apps such as *SketchFactor*, which was launched in 2014 to broad condemnation and accusations that its algorithms (which drew on crowdsourced data about the relative "sketchiness" of urban areas) reinforced racial stereotypes (Commentary 2015; Leszczynski 2016), they, too, create algorithmic imaginaries. Although there is a growing awareness of and attention to the problem of algorithmic urbanism by researchers across the disciplines of geography, digital media, and human-computer interaction, algorithms themselves are particularly resistant to analysis. As Kitchin (2017a) explains, the opacity, inaccessibility, embeddedness, hetero- and ontogeneity, performativity, and contingent nature of algorithms pose significant challenges for researchers, requiring new and refined methodological approaches (pp. 20–32).

Our selective sampling of the tools and technologies we briefly reviewed in this chapter highlights the need for further work. What these tools do *not* do yet – individually or in general – is overtly or reflexively challenge the kind of algorithmic urbanism we outlined earlier in this chapter and which is increasingly shaping, defining, augmenting, and constraining urban imaginaries at all levels: from the citizen to the city planner and civic administration. Emphasis needs to be placed on new ways to promote self-aware algorithmic tinkering and the DIY programming of subjective algorithms (Galloway 2006). As well, further inroads to making the inner workings of algorithmic culture explicit could increase awareness, transparency, and accountability. This remains a challenge for research and development at the intersection of Internet studies and urban studies and one that all the while also requires foregrounding a co-creative urbanism that promotes urban imaginaries and prevents citizens losing agency, responsibility, and ownership over tomorrow's cities.

References

- ActionStation (2016) Retrieved 19 Sept 2017, from <http://www.actionstation.org.nz/about>
- Aiello LM, Barat A, Schifanella R, Cattuto C, Markines B, Menczer F (2012) Friendship prediction and homophily in social media. *ACM Trans Web* 6(2):1–33
- Albright J (2011) Did Twitter censor Occupy Wall Street. *The Conversation* 12 Oct 2011. Retrieved from <https://theconversation.com/did-twitter-censor-occupy-wall-street-3822>
- Altintas I, Gupta A (2016) Introduction to Big Data. Retrieved 7 Apr 2017, from <https://www.coursera.org/learn/big-data-introduction>
- Andris C, Lee D, Hamilton MJ, Martino M, Gunning CE, Selden JA (2015) The rise of partisanship and super-cooperators in the U.S. House of Representatives. *PLoS One* 10(4):e0123507
- Ball L (2009) Cholera and the pump on Broad Street: the life and legacy of John Snow. *Hist Teach* 43(1):105–119
- Batty M (1976) Urban modelling: algorithms, calibrations, predictions. Cambridge University Press, Cambridge
- Batty M (2013a) The new science of cities. MIT Press, Cambridge, MA
- Batty M (2013b) Urban informatics and Big Data. ESRC Cities Expert Group. Retrieved from <http://www.spatialcomplexity.info/files/2015/07/Urban-Informatics-and-Big-Data.pdf>
- Bays J, Callanan L (2012) Emerging trends in urban informatics. McKinsey on Society. Retrieved from <http://mckinseyonsociety.com/downloads/reports/Social-Innovation/Emerging-trends-in-urban-informatics.pdf>
- Benoiston de Châteauneuf LF, Chevallier JB, Devaux L, Millot L, Parent-Duchâtel A, Petit de Maurienne A, ... Villot M (1834) Rapport sur la marche et les effets du choléra-morbus dans Paris et les communes rurales du département de la Seine. Imprimerie Royale, Paris
- Boyd D, Crawford K (2012) Critical questions for Big Data: provocations for a cultural, technological, and scholarly phenomenon. *Inf Commun Soc* 15(5):662–679
- Brown B, Bleeker J, D'Adamo M, Ferreira P, Formo J, Glöss M, ... Ydholm M (2016) The IKEA Catalogue: design fiction in academic and industrial collaborations. In: Proceedings of the 19th international conference on supporting Group Work (GROUP '16). ACM, New York, NY, USA, 335–344. <https://doi.org/10.1145/2957276.2957298>
- Burrows R, Savage M (2014) After the crisis? Big Data and the methodological challenges of empirical sociology. *Big Data Soc* 1(1):2053951714540280
- Byrne J, Osborne N (2016) Urban hacktivism: getting creative about involving citizens in city planning. *The Conversation*, Retrieved 20 July 2017, from <http://theconversation.com/urban-hacktivism-getting-creative-about-involving-citizens-in-city-planning-62277>
- Cairncross F (1997) The death of distance: how the communications revolution will change our lives. Cambridge, MA
- Cinar A, Bender T (2007) Urban imaginaries: locating the modern city. University of Minnesota Press, Minneapolis
- Coletta C, Kitchin R (2017) Algorhythmic governance: Regulating the “heartbeat” of a city using the Internet of Things. *Big Data & Society*, 4(2). <https://doi.org/10.1177/2053951717742418>
- Commentary (2015, February 27) The ethical blindness of algorithms. Retrieved 20 Sept 2017, from <https://qz.com/343750/the-ethical-blindness-of-algorithms/>
- Craven E (2015) Story City. Retrieved 18 Sept 2017, from <http://www.storycity.com.au/about/our-social-philosophy/>
- de Waal M (2014) The city as interface: how new media are changing the city. NAI010 Publisher, Rotterdam
- Diakopoulos N (2014) Algorithmic accountability reporting: on the investigation of black boxes. Tow Center for Digital Journalism, Columbia University, New York
- Dourish P (2016) Algorithms and their others: algorithmic culture in context. *Big Data Soc* 3(2). <https://doi.org/10.1177/2053951716665128>
- Duarte F, Firmino R, Crestani A (2015) Urban phantasmagorias: cinema and the immanent future of cities. *Space Cult* 18(2):132–142

- Duranton G, Puga D (2000) Diversity and specialisation in cities: why, where and when does it matter? *Urban Stud* 37(3):533–555
- Dvir-Gvirsman S (2017) Media audience homophily: Partisan websites, audience identity and polarization processes. *New Media & Society*, 19(7), 1072–1091. <https://doi.org/10.1177/1461444815625945>
- Estrada-Grajales C, Foth M, Mitchell P (2018) Urban imaginaries of co-creating the city: local activism meets citizen peer-production. *J Peer Prod* 11. <http://peerproduction.net/issues/issue-11-city/peer-reviewed-papers/urban-imaginaries-of-co-creating-the-city/>
- Finn E (2017) What algorithms want: imagination in the age of computing. MIT Press, Cambridge, MA
- Foo B (2012) Cities of you. Retrieved 18 Sept 2017, from <http://citiesofyou.com/>
- Foresman TW (1998) The history of geographic information systems: perspectives from the pioneers. Prentice Hall, Upper Saddle River
- Foth M (ed) (2009) Handbook of research on urban informatics: the practice and promise of the real-time city. Hershey, PA: IGI Global. ISBN 978-1-60566-152-0
- Foth M, Choi H-J, Satchell C (2011a) Urban informatics. In: Proceedings CSCW '11. ACM, New York
- Foth M, Satchell C, Bilandzic M, Hearn G, Shelton D (2011b) Dramatic character development personas to tailor apartment designs for different residential lifestyles. In: Foth M, Forlano L, Satchell C, Gibbs M (eds) From social butterfly to engaged citizen: urban informatics, social media, ubiquitous computing, and mobile technology to support citizen engagement. MIT Press, Cambridge, MA, pp 461–484
- Foth M, Schroeter R, Anastasiu I (2011c) Fixing the city one photo at a time: mobile logging of maintenance requests. In: Proceedings of the 23rd Australian computer-human interaction conference. ACM, New York, pp 126–129
- Foth M, Brynskov M, Ojala T (eds) (2015) Citizen's right to the digital city: urban interfaces, activism, and placemaking. Springer, Singapore
- Foth M, Hudson-Smith A, Gifford D (2016) Smart cities, social capital, and citizens at play: a critique and a way forward. In: Olleros FX, Zhegu M (eds) Research handbook on digital transformations. Edward Elgar, Cheltenham, pp 203–221
- Fredericks J, Caldwell GA, Tomitsch M (2016) Middle-out design: collaborative community engagement in urban HCI. In: Proceedings of the 28th Australian conference on computer-human interaction. New York, NY, pp 200–204
- Galloway AR (2006) Gaming: essays on algorithmic culture. University of Minnesota Press, Minneapolis
- Gillespie T (2011) Can an algorithm be wrong? Twitter trends, the specter of censorship, and our faith in the algorithms around us. Culture Digitally. Retrieved from <https://socialmediacollective.org/2011/10/19/can-an-algorithm-be-wrong/>
- Gillespie T (2012) The relevance of algorithms. In: Gillespie T, Boczkowski P, Foot K (eds) Media technologies: essays on communication, materiality, and society. MIT Press, Cambridge, MA, pp 167–194
- Gleeson B (2014) The urban condition. Routledge, London
- Goodchild MF (2007) Citizens as sensors: the world of volunteered geography. *GeoJournal* 69(4):211–221
- Goodspeed R (2016) The death and life of collaborative planning theory. *Urban Plan* 1(4):1–5
- Gordon E, de Souza e Silva A (2011) Net locality: why location matters in a networked world. Wiley, Chichester
- Graham S (2005) Software-sorted geographies. *Prog Hum Geogr* 29(5):562–580
- Graham S, Marvin S (1996) Telecommunications and the city: electronic spaces, urban places. Routledge, London
- Graham M, Shelton T (2013) Geography and the future of big data, big data and the future of geography. *Dialogues Hum Geogr* 3(3):255–261
- Gurstein M (2007) What is community informatics (and why does it matter)? Polimetrica, Milan

- Hardey M (2007) The city in the age of Web 2.0: a new synergistic relationship between place and people. *Inf Commun Soc* 10(6):867–884
- Harvey D (2003) The right to the city. *Int J Urban Reg Res* 27(4):939–941
- Hearn G, Mandeville T, Anthony D (1999) The communication superhighway: social and economic change in the digital age. Allen & Unwin, Sydney
- Hemment D, Townsend A (eds) (2013) Smart citizens. FutureEverything, Manchester
- Hilbert M (2016) Big Data for development: a review of promises and challenges. *Dev Policy Rev* 34(1):135–174
- Huyssen A (2008) Other cities, other worlds: urban imaginaries in a globalizing age. Duke University Press, Durham
- Iveson K (2013) Cities within the city: do-it-yourself urbanism and the right to the city. *Int J Urban Reg Res* 37(3):941–956
- Jacobs J (1969) The economy of cities. Vintage Books, New York
- James A (2009, April 13) AmazonFail: an inside look at what happened. Retrieved 7 Apr 2017, from <http://blog.seattlepi.com/amazon/2009/04/13/amazonfail-an-inside-look-at-what-happened/>
- Jenkins H (2006) Fans, bloggers, and gamers: exploring participatory culture. New York University Press, New York
- Kelley MJ (2013) The emergent urban imaginaries of geosocial media. *GeoJournal* 78(1):181–203
- Kelly G, McCabe H (2007) Interactive city generation methods. In: ACM SIGGRAPH 2007 posters. ACM, New York. <https://doi.org/10.1145/1280720.1280829>
- Kitchin R (2015) Data-driven, networked urbanism. *SSRN Electron J.* <https://doi.org/10.2139/ssrn.2641802>
- Kitchin R (2016) The ethics of smart cities and urban science. *Philos Transact A Math Phys Eng Sci* 374(2083). <https://doi.org/10.1098/rsta.2016.0115>
- Kitchin R (2017a) Thinking critically about and researching algorithms. *Inf Commun Soc* 20(1):14–29
- Kitchin R (2017b) Urban Science: A Short Primer. *SocArXiv*. February 1. <https://doi.org/10.31235/osf.io/sdsu2>
- Laney D (2001) 3D data management: controlling data volume, velocity and variety. META Group research note
- Lefebvre H (1968) Le droit à la ville, 2nd edn. Anthropos, Paris
- Lefebvre H (1970) La révolution urbaine, vol 216. Gallimard, Paris
- Leszczynski A (2015) Spatial media/tion. *Prog Hum Geogr* 39(6):729–751. <https://doi.org/10.1177/0309132514558443>
- Leszczynski A (2016) Speculative futures: cities, data, and governance beyond smart urbanism. *Environ Plan A* 48(9):1691–1708
- Lotan G (2014) Israel, Gaza, War & Data: social networks and the art of personalizing propaganda. Retrieved from <https://medium.com/i-data/israel-gaza-war-data-a54969aeb23e>
- Manguel A, Guadalupi G (1999) The dictionary of imaginary places. Bloomsbury, London
- Matejskova T, Leitner H (2011) Urban encounters with difference: the contact hypothesis and immigrant integration projects in eastern Berlin. *Soc Cult Geogr* 12(7):717–741
- Mattern S (2017) A city is not a computer. *Places J.* Retrieved from <https://placesjournal.org/article/a-city-is-not-a-computer/>
- Mauro AD, Greco M, Grimaldi M (2016) A formal definition of Big Data based on its essential features. *Libr Rev* 65(3):122–135. Great Britain. Forestry Commission
- Mayer-Schönberger V, Cukier K (2013) Big Data: a revolution that will transform how we live, work, and think. Houghton Mifflin Harcourt, Boston
- McQuire S (2016) Geodata: networked cities and the future of public space. Wiley/Polity, Hoboken/Cambridge
- Mitchell WJ (1995) City of bits: space, place, and the infobahn. MIT Press, Cambridge, MA
- Mitchell P, Highfield T (2017) Mediated geographies of everyday life: navigating the ambient, augmented and algorithmic geographies of geomedia. *Ctrl-Z New Media Philos* 7. <http://www.ctrl-z.net.au/journal/?slug=mitchell-highfield-mediated-geographies-of-everyday-life>

- Monmonier MS (2015) The history of cartography. University of Chicago Press, Chicago
- Odendaal N (2006) Towards the digital city in South Africa: issues and constraints. *J Urban Technol* 13(3):29–48
- Ottaviano GIP, Peri G (2006) The economic value of cultural diversity: evidence from US cities. *J Econ Geogr* 6(1):9–44
- Pariser E (2011) The filter bubble: what the Internet is hiding from you. Penguin Press, New York
- Park R (1967) On social control and collective behavior. University of Chicago Press, Chicago
- Press G (2013, May 9) A very short history of big data. *Forbes Tech Magazine*
- Rabari C, Storper M (2015) The digital skin of cities: urban theory and research in the age of the sensored and metered city, ubiquitous computing and big data. *Cambridge Journal of Regions, Economy and Society*, 8(1), 27–42. <https://doi.org/10.1093/cjres/rsu021>
- Sassen S (1996) Whose city is it? Globalization and the formation of new claims. *Publ Cult* 8(2):205–223
- Sassen S (2015, November 24) Who owns our cities – and why this urban takeover should concern us all. *The Guardian*. Retrieved from <http://www.theguardian.com/cities/2015/nov/24/who-owns-our-cities-and-why-this-urban-takeover-should-concern-us-all>
- Shaw J, Graham M (2017) An informational right to the city? Code, content, control, and the urbanization of information. *Antipode*. <https://doi.org/10.1111/anti.12312>
- Silva A (2006) Imaginarios urbanos. Arango, Bogotá
- Silva A (2012) Urban imaginaries from Latin America. *Documenta II. An Inst Invest Estéticas* 28(88):260–226
- Söderström O, Paasche T, Klauser F (2014) Smart cities as corporate storytelling. *Cityscape* 18(3):307–320
- Striphas T (2015) Algorithmic culture. *Eur J Cult Stud* 18(4–5):395–412
- Taylor C (2004) Modern Social Imaginaries. Durham, NC: Duke University Press.
- Thrift N (2014) The promise of urban informatics: some speculations. *Environ Plan A* 46(6): 1263–1266
- Tomlinson RF (1969) A geographic information system for regional planning. *J Geogr (Chigaku Zasshi)* 78(1):45–48
- Townsend A (2013) Smart cities: big data, civic hackers, and the quest for a new utopia, W.W. Norton, New York
- Townsend A (2015) Making sense of the new science of cities. Data & Society Research Institute. Retrieved from <http://www.citiesofdata.org/making-sense-of-the-science-of-cities/>
- Valentine G (2008) Living with difference: reflections on geographies of encounter. *Prog Hum Geogr* 32(3):323–337
- Van Hulst M (2012) Storytelling, a model of and a model for planning. *Plan Theory* 11(3):299–318
- Westwood S (1997) Imagining cities: scripts, signs, memory. Psychology Press, London, UK
- Widmer S (2016) Experiencing a personalised augmented reality: users of Foursquare in urban space. In: Amoore L, Piotukh V (eds) Algorithmic life: calculative devices in the age of big data. Routledge, London, pp 57–71
- Williams A, Robles E, Dourish P (2009) Urbane-ing the city: examining and refining the assumptions behind urban informatics. pp 1–20
- Wood P, Landry C (2008) The intercultural city: planning for diversity advantage. Earthscan, London



New Media, Religion, and Politics: A Comparative Investigation into the Dialogue Between the Religious and the Secular in France and in Vietnam

41

Anh Ngoc Hoang

Contents

Introduction	748
The Centrality of Religion in Social Life in our Postsecular Societies? A Renewed Visibility of Religion in the Public Sphere through New Media?	750
To Put into Question the Secularization Thesis: The Social Significance of Religion in our Contemporary Societies	750
Visibility of Religion's Social Place in the Digital Age Through the Lens of some Major Theoretical Perspectives	753
Comparative Investigation of Religion's Social Place in Two Distinct Societies, French and Vietnamese Ones	755
Public Manifestation of Religious Sentiment after the Terrorist Attacks in Paris on November 13, 2015	756
Sociopolitical Impacts of the Religiously Informed Land Dispute Between Catholic Church and Government in Vietnam 2008–2009	759
Discussions: Could Sacred Forms Be a Perspective of Dialogue Between the Religious and the Secular in Our Contemporary Complex Societies?	761
Conclusion	762
References	763

Abstract

This chapter aims to highlight the importance of studying religion within digital culture, through the mutual interactions between religion, digital media, and politics. It draws on a comparative empirical investigation into the place of religion in two very distinct societies, France and Vietnam, through two recent phenomena, namely the social circulation of the slogan of solidarity “Pray for Paris” on social media following the terrorist attacks in Paris on 13 November 2015; and, the process and the impacts of Vietnamese digital Catholic

A. N. Hoang (✉)

Faculty of Humanities, Université Catholique de l’Ouest, Angers, France
e-mail: ahoang@uco.fr

communication in the Church-State land disputes during the 2008–2010. Challenging the dominant and popular assumption about religion as a source of anxiety for the public sphere, this study offers a discussion of a potential perspective of dialogue between the religious and the secular by the mediation of the sacred in our complex contemporary societies. Conceived of as an “in-between” category, “sacred forms” proved to be fecund and heuristic, by allowing to identify and to favor a productive tension between the religious and the secular, when facing with current diverse radicalisms of all kinds in the world.

Keywords

New media · Religion · Sacred · Politics · Secular · Public sphere

Introduction

Religion has recently been the object of rising attention from public opinion through the media, especially under a very negative guise. Actually, popular discourse often takes for granted the significant roles played by Internet and social media in the process of youth radicalization (See background note “Social media and youth radicalization in digital age,” UNESCO 2016), and growing present-day terrorist attacks in France, England, and various places in the Western world tend to reinforce the idea of a powerful and violent destruction of religion “in the name of God” in public life.

However, this negative image of religion in contemporary social life is far from being the whole story. It helps raise, nevertheless, the inevitable and more general issue of religion’s role and place in society. To put it differently, *political* dimensions of religion matter, as Calhoun speaks about “religion’s many powers” in the following terms, “Religion is threatening, inspiring, consoling, provocative, a matter of reassuring routine or calls to put one’s life on the line. It is a way to make peace and a reason to make war” (Calhoun 2011: 118). In accordance with this more nuanced stance, one could bring to mind different *religiously informed* social movements in diverse historic and social contexts in the world. For instance, one can mention the founding role of religion in the United States where “Christian values and rhetoric were central to the public life of the country” (Ibid. 120) through the antislavery movement, the Social Gospel movement, the civil rights movement, the anti-Vietnam War movement, etc. (Idem. 120–122). It is also significant to highlight “a pivotal influence on political outcomes” (Haynes 2005: 368) of religion through some leading church figures in the combat for democracy in Latin America and Eastern Europe in the late 1980s and early 1990s.

Along with a rising academic interest in studies of the sociopolitical significance of religion (in other terms, the relation between religion and politics), “partly because of anxiety over migration and Islam” (Calhoun, *op.cit.*:125), it is important to underline the growing scholarly works on the interaction between religion and media, particularly between religion and new media. Actually, an ever greater and

newer number of scholarly inquiries into the mutual imbrications of new media and religions in our “digital age” signal clearly the development of this “vibrant and valid area of scholarly interdisciplinary investigation within Internet studies” (Campbell 2013: 4). One can cite some major recent collective works in English: Mahan 2014; Campbell 2013; Gillespie et al. 2013; Hope Cheong et al. 2012; *Journal of Religion, Media and Digital Culture; Online – Heidelberg Journal of Religions on the Internet* (for further information, one could refer to well-documented “Oxford Bibliographies” about “Religion and the Media,” Judith M. Buddenbaum, 2017); and some major collective works in French: Douyère et al. 2016, 2015; Coutarde and Saint-Martin 2016; Duteil-Ogata et al. 2015; Marechal et al. 2011. This perspective of mediations of religions, whose missions and vocations have always been a question of transmission and communication (Marechal et al. 2011: 6; Mahan 2014) requires an effort to think *anew* the question of the relation between religion and politics in the current digital age.

For that critical examination, my work consists in asking a double question, that is, first, whether new media have made possible a renewed and greater visibility of religion in the public sphere on the one hand; second, whether new media could constitute a novel avenue to imagine the dialogue between the religious and the secular by renewing some sacred forms.

To attempt to develop a critical stance on that issue, I put forth the hypothesis of the “centrality of religion in social life” to reproduce the title of Eileen Barker’s edited volume (2010) to challenge the dominant and popular assumption about religion as a source of anxiety for the liberal public sphere (Calhoun, *op.cit*, 119), while still acknowledging the actual and potential negative political effects of religions or so-called religious beliefs in different societies. Furthermore, drawing on Stig Hjarvard’s theory of the *mediatization of religion*; on Stewart M. Hoover’s theory of the *mediation of meaning*; and on Gordon Lynch’s theory of the *mediation of sacred forms*, I will attempt to analyze the meaning-making process by Internet users when engaging with new media in accord with their deepest religious values and moral commitments.

After presenting this theoretical background, I will focus on two cases studies, which are chosen from two distinct culturopolitical settings, namely French and Vietnamese societies, in order to gain, hopefully, some insights by a comparative approach: a comparative investigation into the place of religion through two phenomena, in one case, the social circulation of the slogan of solidarity “Pray for Paris” on social media following the terrorist attacks in Paris on 13 November 2015; in the other case, the process and the impacts of Vietnamese digital Catholic communication in the Church-State land disputes during the period 2008–2009.

The final part of this chapter will discuss a potential perspective of the dialogue between the religious and the secular by the *mediation of the sacred* in our complex contemporary societies in the wake of Durkheimian and neo-Durkheimian scholarship on the social sacred (David Martin 2008; Gordon Lynch 2012; Matthew Francis and Kim Knott 2015). New media offer, according to my hypothesis, a novel avenue to “mediate” contemporary sacred forms.

The Centrality of Religion in Social Life in our Postsecular Societies? A Renewed Visibility of Religion in the Public Sphere through New Media?

It seems important to underline straightaway the (hypo)thesis of secularization as a dominant paradigm within academy and outside the academy to explain the place of religion in modernized societies (Matthew Francis and Kim Knott 2015). Secularization implies “a significant diminishing of religious concerns in everyday life” (Haynes 2005: 370) and “the withdrawal of religion from the public sphere,” and, consequently, “a decline in the influence of religious values and institutions on society” (Matthew Francis and Kim Knott 2015: 44). It has been argued that secularization has been “one of the main social and political trends in Western Europe since the Enlightenment (1720–80)” (Haynes, Ibid.). This process has been accompanied by the separation between church and state in much of Europe.

But this long-standing assumption is now being seriously questioned. In fact, Peter L. Berger in the introduction to his book *The Desecularization of the World: Resurgent Religion and World Politics* (1999) states “The assumption that we live in a secularized world is false” (cited by Hovdelien 2011: 108). I will attempt, in what follows, to argue against the secularization thesis by drawing on some major authors in philosophy and sociology of religion.

To Put into Question the Secularization Thesis: The Social Significance of Religion in our Contemporary Societies

Maybe the most significant theoretical contribution to help examine critically the secularization thesis are Habermas’s recent philosophical reflections. Interestingly, Habermas has evolved from his initial “antireligious assumptions” (Calhoun 1992: 35–36) during the 1970s and 1980s, to a stance where he calls for “an understanding and a translation of the potentials of religious traditions” in contemporary democratic societies (Reder and Schmidt 2010: 5). Actually, in his Peace Prize speech in the German Book Trade in 2001, entitled “Faith and Knowledge,” Habermas argued that “the secularization hypothesis has now lost its explanatory power and that religion and the secular world always stand in a reciprocal relation,” and that “religion proves to be an important moral resource” because “its meaning-endowing function provides a moral basis for public discourse and thereby plays an important role in the public sphere” (Ibid. 6).

In the same perspective, during the encounter and debate with the then cardinal Joseph Ratzinger on the subject “The Pre-Political Moral Foundations for a Free State” in 2004 (The English version of this dialogue is published in *The Dialectics of Secularization. On Reason and Religion*, 2006, Ignatius.), Habermas addressed Ernst-Wolfgang Böckenförde’s question concerning the normative presuppositions of the secularized state: “Does the free, secularized state exist on the basis of normative presuppositions that it itself cannot guarantee? (Habermas and Ratzinger 2006: 21). In other terms, Habermas tried to discuss “what sort of value basis society

should rest on” (Hovdlien 2011:110). In this context, the philosopher argued that a free state “depends on moral stances which stem from pre-political sources, for example from religious ways of life” (Reder and Schmidt *op.cit.*: 7). In this line of argument, he considered contemporary societies as postsecular societies, as he explained in the following terms:

The expression “postsecular” does more than give public recognition to religious fellowships in view of the functional contribution they make to the reproduction of motivations and attitudes that are societally desirable. [...] In the postsecular society, there is an increasing consensus that certain phases of the “modernization of the public consciousness” involve the assimilation and the reflexive transformation of both religious and secular mentalities. If both sides agree to understand the secularization of society as a complementary learning process, then they will also have cognitive reasons to take seriously each other’s contributions to controversial subjects in the public debate. (Habermas *op.cit.*: 46–47)

That’s why in spite of his post-metaphysical stance, Habermas now “acknowledges religious descriptions of reality as alternative forms of rationality” (Hovdlien *op. cit.*: 112). Consequently, the rationalist philosopher and social critic calls for a dialogue between reason and faith, between secular citizens and believing citizens:

When secularized citizens act in their role as citizens of the state, they must not deny in principle that religious images of the world have the potential to express truth. Nor must they refuse their believing fellow citizens the right to make contributions in a religious language to public debate. Indeed, a liberal political culture can expect that the secularized citizens play their part in the endeavors to translate relevant contributions from the religious language into a language that is accessible to the public as a whole. (Habermas *op.cit.*: 51–52)

Apart from Habermas, recently other contemporary social thinkers and critics have also argued in favor of the recognition of religion in social life. For instance, in the volume entitled “The Power of Religion in the Public Sphere” (2011) where four prominent public philosophers, namely Judith Butler, Jürgen Habermas, Charles Taylor, and Cornel West, took part in a dialogue on the question of religion’s place in the public sphere, it is noteworthy that Taylor and West underlined, though in different ways, the importance of religion in our contemporary pluralist societies. Actually “concerned with identifying ways in which the public sphere can help to produce greater integration among citizens who enter public discourse with different views,” Taylor “stresses mutual recognition and collaboration in common pursuits” (Calhoun 2011: 129). With a different conception of the public sphere from Habermas who sees it entirely in terms of argumentation about the truth value of proposition, Taylor understand the public sphere as a realm of creativity and social imaginaries, a realm of exploration, experiment, and partial agreements. However, like Habermas, Taylor considers the withdrawal of religion from the public sphere as “undermining the solidarity and creativity” (*Ibid.*).

As regards Cornel West, he insists on the place of “prophetic religion” in the public sphere. West emphasizes that Christian tradition provides an existential insight into the “crises and traumas of life” that allows one to “hold at bay the sheer absurdity so evident in life, without erasing or eliding the tragedy of life”

(West, *The American Evasion of Philosophy*, 1989: 233, cited by Mendieta and Van Antwerpen 2011: 10). Disruptions generated by “prophetic religion” are, West argued, calls to attention to think and look anew. In that perspective, religions, in their prophetic dimension, provide moral visions and “an empathetic and imaginative power that confronts hegemonic powers always operating” (*Ibid.* 11).

As the history of secularism in the West is, from Charles Taylor’s viewpoint, essentially linked to the two important “founding contexts” of the United States and France (*Ibid.* 6), it is now significant to take into consideration the question of the role of religion in the French context. For that purpose, it is noteworthy to mention one recent collective volume entitled *Expression of religions in the Public Sphere* (L’*Expression du religieux dans la sphère publique*, 2016. My translation (MT).) that was published shortly after the terrorist attack in Paris in January 2015. In the Part Four that addressed the issue “What place for believers in European secularized societies?,” one can notice a significantly relevant article in relation to our argument: “The democratic benefits of inclusive secularity” (“Les bénéfices démocratiques d’une laïcité inclusive,” 2016. MT.) by Jean-Paul Willaime, a French sociologist of Religious Studies. While acknowledging the real risks that religions could represent for individuals (concerning a person’s fundamental freedoms) and society (a religious system as a true alternative counter-society that generates problems of integration), Willaime mainly insists on the benefits of religion for our democracies. In fact, understanding religions as “symbolic configuration” with collective, material, symbolic, and sensitive dimensions, the French sociologist argued that religions “enable people to live their condition in a horizon of meaning” (Willaime 2016: 194) and to “try to symbolically master their existence” (*Ibid.* 197). Interestingly, here Willaime’s argument in favor of the positive role of religion in society resonates with Cornel West’s idea of “prophetic religion”:

Not only because they [religions] comfort sorrows and enable to endure sufferings and to face death, but also because by indicating life orientations and giving confidence in the future, they structure behaviors and push to individual and collective action, especially in the educational and charitable fields [...] Religions therefore humanize the men and women who practice them, they help to civilize them. (*Ibid.* 194–195. MT)

This argument leads the French sociologist to a stance where he seeks to defend, within a particularly complex French context of the relation between the religion and the secular, what he names a “secularity of recognition” [“laïcité de reconnaissance”]. Willaime defines “secularity” (laïcité) as “the Secular State, that is to say in democratic societies, a neutral and impartial state in relation to the religions and convictions of its nationals, in other words a State which, as a State, professes neither a particular religion nor any atheist philosophy of life” (Willaime *Ibid.* 198. MT). In that perspective, a “secularity of recognition” means, Willaime states, a “social recognition of religions,” that is “when they are regarded as specific social and cultural realities” (*Ibid.* 200. MT). Consequently, Willaime urged us to “welcome a proactive and inclusive conception of secularity which [...] can take positively into account the contributions of the religious elements of society. A way to rediscover

the fact that religions also nourish solidarity and deeply altruistic commitments, that they are reservoirs of commitments and hopes that can socialize people . . . It is also a way of preventing the deadly radicalization that can tempt people who have lost their bearings and are in search of certainty” (*Ibid. MT*).

Finally, it is interesting to raise the following question, as Haynes puts it, “Are people becoming personally more religious while their societies are becoming collectively more secular?” (Haynes 2005: 372). It is a way to recognize the greater importance of religions in contemporary people’s life in Western countries that were believed to be highly secularized. One main argument to support this assumption is the fact that “religion is replacing secular ideologies which have lost appeal for many people” (Haynes *op.cit*: 372).

This “return to religion” is more apparent in non-Western countries of the “Third World.” Actually, these countries constitute “an especially fertile milieu for the growth of religion with political goals” because of various factors such as inconclusive or unsatisfactory modernization; disillusionment with secular nationalism; problems of state legitimacy; political oppression and incomplete national identity; widespread socioeconomic grievances; perceived erosion of traditional morality and values (*Ibid.* 376). In other terms, rather than “a return to religion,” it is “the mobilization of religious belief in pursuit of social, political and economic goals” (*Ibid.* 377).

Thus, it is highly likely that religion will continue to play a political role in many parts of the world. In Western societies which were secularized, a renewed public role of religions is recognized because of the need to integrate again religious values, motivations, meanings, and commitments, so that there is a dialogue between believing citizens and secular citizens in the public sphere. In the emergent countries where most people are religious believers, faced with widespread disappointment at the outcomes of modernization, religion provides “answers to existential angst” (Haynes, *op.cit.* 376), gives life some purpose and meaning, but also offers motivation for combating for a better and more just life.

Now, to go further in our analysis, we could ask whether this recognition of religion’s renewed role in the social life is linked to the phenomena of the medialization of religion, especially by new media.

Visibility of Religion’s Social Place in the Digital Age Through the Lens of some Major Theoretical Perspectives

To attempt to approach the issue of the relation between the public role of religion and new media in our contemporary societies, one could rely on the three following major theoretical frameworks that seem most relevant to our perspective.

Firstly, Stewart M. Hoover’s theory of *mediation of meaning* is based on a cultural approach to the study of media and religion, expressed in his book named *Religion in the Media Age*, 2006. This approach focuses on “the social meanings that the media have for people,” and as a consequence, “turns to the reception side of

communication" (Lundby 2012: 230). Hoover states, "The various media and messages that are accessible to individuals in the private sphere are received, understood, and potentially used in other spheres of social and cultural life" (Hoover 2006: 36). In other terms, Hoover is concerned with the meaning-making processes of everyday life around media which he understands as "practices" (*Ibid.* 23–24), that is he goes beyond "media" as just institutions, texts, or technological objects. To theorize media as practice is, as Nick Couldry explains it (2004), to ask what people are *doing* in relation to media across a whole range of situations and contexts (Lundby, *op.cit.230*).

The interest of Hoover's approach lies in a broader view of the interplay between media, religion, and culture. Drawing on the influential work of Martín-Barbero (1993), Hoover moves from the media to mediations in the sense that "the mediation of meaning takes place within a larger matrix of communication, culture, and hegemony" (Lundby, *op.cit.230*). Thus, Hoover's theory of mediation of meaning will appear particularly heuristic in our coming analysis of religious meanings in specific sociopolitical settings of French and Vietnamese societies.

Secondly, Stig Hjarvard's theory of the *mediatization of religion* is part of his more general theory of the mediatization of society. Mediatization is, Hjarvard argued, a two-sided process that characterizes our late modern society "in which the media on the one hand emerge as an independent institution with a logic of its own that other institutions have to accommodate to. On the other hand, media simultaneously become an integrated part of other institutions" (Hjarvard 2008b: 105). Since religion is one of these "other" institutions, Hjarvard holds, "Through the process of mediatization, religion is increasingly being subsumed under the logic of the media" (Hjarvard 2008a: 11). Concretely, the media have become the primary source of religious ideas ("media" understood metaphorically here as conduits for the delivery of the contents); "the media mould religious imagination in accordance with the genres of popular culture" ("media" understood as language); and "the media have taken over many of the social functions of the institutionalized religions" ("media" understood as cultural environment) (Hjarvard 2008a: 9).

The interest of Hjarvard's theoretical framework consists in highlighting the increasingly influential role of media in late modern society, even though many of his arguments are based on popular media such as film and television. His approach will contribute to support our main thesis in this chapter, which is that contemporary new media enable a renewed visibility of the social significance of religion in the digital age.

Thirdly and lastly, Gordon Lynch's theory of *mediation of sacred forms* draws on a cultural sociology of the sacred, in line with a Durkheimian scholarly tradition. In his book *The Sacred in the Modern World. A Cultural Sociological Approach* (2012), Lynch makes a shift from "the religion" to "the sacred," because, he argued, "the wider range of sacred forms that exert considerable influence over contemporary life cannot be easily encapsulated within the concept of 'religion,'" while still acknowledging that "contemporary sacred forms often have a significant religious past, and sacred forms associated with particular religious traditions and communities play a part in the multiplicity of sacred forms within contemporary society"

(Lynch 2012: 5). By a “critical rereading of Durkheim,” Lynch defines the *sacred* “by what people collectively experience as absolute, non-contingent realities which present normative claims over the meanings and conduct of social life” (Ibid. 29). At the same moment, he defines “sacred forms” as “specific, historically contingent, instances of the sacred,” “constituted by constellations of specific symbols, thought/discourse, emotions and actions grounded in the body” (Ibid. 29). For Lynch, “all sacred forms are mediated. The interaction of symbol, thought, feeling and action that characterizes sacred forms is only possible through media which give sacred forms material expression” (Ibid. 87). It leads to what the British sociologist calls “the mediatization of the sacred.”

The interest of Lynch’s theory lies in a twofold contribution to our issues: first, it argues in favor of the central place of media in the process of the mediation of the sacred forms in contemporary societies. Second, it helps to consider *anew* the question of religion by adopting the overlapping category “sacred” which enables, as will be discussed in more detail later on, a possibility of dialogue between the religious and the secular.

To summarize, this theoretical background presentation has underlined two fundamental arguments, namely first, the central place of religion in social life in a postsecular society; and, second, the renewed visibility of this social significance of religion through the diverse mediation and mediatization of meanings, of religions and of the sacred.

In order to illustrate these arguments, it is significant to take into consideration two case studies in the coming part.

Comparative Investigation of Religion’s Social Place in Two Distinct Societies, French and Vietnamese Ones

In order to understand the choice of this comparative investigation, it is first of all necessary to explain the aim of this method and the reason for choosing the two countries, namely France and Vietnam.

So, why compare two cases, two situations? Maybe, simply, because according to common sense, it is believed that comparison helps see more clearly a reality, a phenomenon. However, on a more academic level, this methodological choice is based on the philosophical stance of Francois Jullien, a French philosopher and sinologist (Jullien 2012). Actually, it’s an attempt to conduct “a deconstruction from the outside” (“deconstruction d’un dehors”), that is an effort to self-decentralize by exploring an “*écart*,” a *distance* between two distinct cultures, societies.

In our case, it will be an initiative to put in a *vis-à-vis* French society and Vietnamese society with regard to the question of the public place of religion in these societies. As we will try to point out, this issue appears very specific in each case, since France is considered a democratic society and a “founding context” of secularity/secularism in the West while Vietnam is considered a society under a communist regime and, at the same time, a postcolonial country with multiple ancestral spiritual traditions and religious beliefs. We hold that taking these two

cases into consideration means putting them in tension, and that this tension will help to think differently and anew.

Public Manifestation of Religious Sentiment after the Terrorist Attacks in Paris on November 13, 2015

To grasp the meaning of the public expression of religious sentiment after the terrorist attacks in Paris on November 13, 2015, first of all, it is important to stress that France is well known for her specific “laïcité” which requires an explicit discussion.

The French sociologist of religion, Jean-Paul Willaime, argued that the French conception of “laïcité” is deeply marked by *paradoxes* at work between, on the one hand, a principal “laïcité” which is open-minded and respectful of the existence of religions; and, on the other hand, a hard-line and ideological “laïcité” deeply suspicious of religion and opposed to public displays of religious affiliations (Willaime 2008: 41). This second tendency represents an ideological viewpoint and a polemical rhetoric that captivates intellectuals and public opinion to such an extent that French “laïcité” is considered a French passion (Baubérot 2004).

It is worth mentioning here that from a juridical point of view, “laïcité” is defined “neither (as) an agnostic counterculture, nor (as) the implementation of a complete privatization of religion,” but as “a means of social pacification that allows for the regulation of religious diversity in society, while guaranteeing the religious neutrality of the State” (Ibid. 42). This understanding is clearly expressed in the report of the “Stasi Commission” (The report of the “advisory commission on the application of the principle of laïcité in the Republic,” submitted to the then President, Jacques Chirac, on 11 December 2003 (Willaime 2008: 42).) in which one could read the official definition of “laïcité”:

[...] Laïcité implies the State’s neutrality: it must not favour any spiritual or religious belief.
[...] Freedom of religion allows all religions freedom of expression and association and the shared pursuit of spiritual goals. Seen in this way, this freedom must exclude any anti-religious approach. [...] In secular framework, spiritual or religious choices are a matter of individual freedom. However, this does not mean that these questions are limited to the depths of one’s conscience [...], and that the social dimension of religious beliefs or the possibility of expressing them in public is denied [...]. (Stasi 2004: 30–31, cited by Willaime 2008: 42)

But, if this legal understanding seems clear and convincing, why has “laïcité” always been a much debated issue in France? Here, considering the historical grounds of French “laïcité” could be a way to develop a critical reflection on this “passionate” but seriously divisive question for the French population. Actually, the historical fact is that French laïcité was established in “a confrontational context,” namely “the fight against clericalism; that is, against the power of the Church over society and individuals” (Ibid. 43). In other terms, “in France, much more than in other countries, the construction of democracy and the institutionalization of a

republican system therefore took place in a context of frontal opposition to religion, in this case an open conflict with the Catholic Church" (*Ibid.* 44). This historical context helps clarify some particularities of France in the area of the relations between the State, religions and society as the following:

- First, church-state relations have been more confrontational in France than elsewhere.
- Second, the question has a strongly ideological nature here with the influence of philosophical conceptions and political critiques of religions.
- Third, the supremacy of the state and its authority over civil life is affirmed here more strongly than elsewhere.
- Fourth, there is strong resistance here toward public expressions of religious affiliation, and the disappearance of religious activity from public life is more accentuated in France than elsewhere in Europe (*Ibid.*)

In a word, it is clear that the history of France has fueled a particular representation of religion: a consistent tendency to want to "rescue people from the dark realms of religion instead of simply creating separate spaces for Church and State" (Pierre Bouretz, "La démocratie française au risque du monde," 2000: 31, cited by Willaime, *Ibid.* 45).

Being aware of this profound tension that lies deeply in French society in her relation to religion is a condition for analyzing and understanding some contemporary phenomena of social life when engaging with fundamental rights and values of human beings and of citizens in a democratic society such as freedom of religion, freedom of conscience, freedom of thought, but also sense of identity, sense of belonging, etc.

Now, it is time to take an empirical case to study: the social circulation of the solidarity slogan "Pray for Paris" following the deadly terrorist attacks in Paris on November 13, 2015. In that communication phenomenon, the question we choose to focus on, within the aim of this chapter, is to analyze in what ways new media enable a renewed visibility of religion's political significance in French society where religion in the public sphere, as mentioned previously, has always been a sensitive issues (This analysis is based on my article "« PrayforParis » : de la performance communicative d'un hashtag au questionnement de la place de religions dans la sphère publique" [""PrayforParis": from the communicative performance of a hashtag to the questioning of the place of religion in the public sphere"], Hoang 2016). For that purpose, drawing on a techno-semiotic approach of communication, my analysis pointed out the interplay of two factors which are supposed to explain the powerful circulation of the slogan "Pray for Paris" in various social spaces: first, a communicative performance as a result of particularities of digital (new) media, especially social media; second, a powerful circulation of a message which touched one of the deepest dimension of human life, that is the religious dimension through prayerful aspect when facing with tragic events of life.

Actually, the communicative performance of the slogan "Pray for Paris" relies inevitably on a set of formal, material, and technical factors which are specific to digital media. For instance, the hashtag #PrayforParis represents a particular media

form that could be defined as a “small form,” that is “a condensed and stereotyped media form (meta-form) that is mobilized, automated and disseminated in all types of contexts to support typical cultural and daily gestures” (Jeanneret 2015: 13. MT). Just like “tweets” with a textual length reduced to 140 characters, all these “small forms” inhabit spaces of “conversations” and “sharings” in social media. If these “small forms” could circulate widely, rapidly, easily through computer-mediated communication flows, it’s because they are typical products of the logics of industrialization and standardization of contemporary media forms. Another specific feature of social media is the “discursive conatus,” defined as a “call to write and to contribute unceasingly which is cultivated in so-called participative forms of the media and glorified by the display of all the productions of the amateurs” (*Ibid.* 11). This “discursive conatus” incited effectively Twitter, Facebook, and Instagram members to spread this message of solidarity #PrayforParis in the wake of this tragic event. Moreover, the circulation of the #PrayforParis hashtag has also been linked to the reworkings, rewritings, and appropriations carried out by traditional mass media actors, which give it precisely greater media visibility and “naturalized” societal legitimacy.

The widespread dissemination of the slogan “Pray for Paris” in new media stems also from the capacity of these “new media” to draw their resources from the “archives” of the social memory with regard to the question of “forms.” Indeed, the slogan “Pray for Paris” is part of these highly condensed statements with a communication force based on a minimal expression, such as the famous “We are all Americans” in the editorial of Jean-Marie Colombani in *Le Monde* the day after the attacks of September 11, 2001 in the United States; or the famous “Ich bin ein Berliner” (I am a Berliner) by US President Kennedy during his visit to West Berlin on June 26, 1963.

However, beyond technical, material, and formal dimensions which are constitutive of this communication phenomenon, “Pray for Paris” has been powerful because of its message which conveys an explicitly religious dimension. Indeed, the word “pray” refers directly to “a significant and universal aspect of religion” (Adalbert G. Hamman, online Encyclopædia Britannica, <http://global.britannica.com/topic/prayer>). Thus, the slogan “Pray for Paris” fits right into this religious universe by evoking its fundamental act that is the prayer. Moreover, it’s important to note that the hashtag #PrayForParis on Twitter emerged initially from North America on the night of November 13, 2015, where a sense of the religious as a deep social imaginary is manifest in expressions as “I’ll pray for you.” Significantly, this religious expression in “Pray for Paris” generated different visual forms that put forward explicit religious symbols such as lit candles, and provoked an initiative called “#UneBougiePourParis” [a candle for Paris] according to which French people are said to post on a dedicated account of Facebook or Twitter photos of a small flame placed on their window or balcony.

In summary, the slogan “Pray for Paris,” which draws its performance of social circulation from specific features of digital media, highlights a political role of the religion in the public sphere because it performs the gesture of prayer as a gesture of *communion* which institutes a reconfigured community, faced with the tragic event of the terrorist attacks, by the double bonds of divine filiation (by “praying”) and of human fraternity (“for Paris”).

It is now interesting to move out of this “founding context” of secularity in the West in order to discover this question in another non-Western context: Vietnamese society.

Sociopolitical Impacts of the Religiously Informed Land Dispute Between Catholic Church and Government in Vietnam 2008–2009

As in the previous analysis of the case of France, it is necessary to start this new case study by presenting a brief outline of the question of religion in the public life in Vietnam. Within the scope of this chapter, and as regard the aim of our investigation, we will focus on the relation between Catholicism and State in Vietnam.

First of all, it is important to stress that in contemporary Vietnam, the communist Marxist-Leninist regime of Hanoi officially provides, in her Constitution, for freedom of worship and belief, and nonbelief, but in reality they have imposed a range of legislation restricting religious practices. It is clearly and most convincingly argued in most academic literature that the Vietnamese Government adopts a systematically repressive approach towards religion (Hansen 2005; Abuza 2015; Thayer 2014): for instance, heavy government regulation of religious activities; sustained and unwarranted official interference in religion (Taylor 2008: 7–8). Moreover, it should be pointed out that “official ambivalence towards religion remains” (*Ibid.* 10), and one could see, paradoxically, “the proliferation of religion in present-day Vietnam” “as a response to the decline in state power or the plausibility of official grand narratives in an era of post-socialist economic policies” (Fahey 1998: 233, cited by Taylor, *op.cit.* 11). So, what could we understand from “the coexistence today in Vietnam of a strong centralized bureaucratic state and a vibrant religious scene”? Maybe, we will realize that “the realms of religion and politics are not reducible to each other, just they are not necessarily in competition with each other” (*Ibid.* 15).

As far as Vietnamese Catholicism is concerned, it is worth mentioning that Vietnam is the second largest catholic country in Southeast Asia after the Philippines. Catholic communities have had a continuous presence in Vietnam for over 400 years (Taylor *Ibid.* 42). Until late 1980s, the Catholic Church in North Vietnam under communist rule had suffered from severe political and religious discrimination. At the arrival of the communist regime throughout Viet Nam in April 1975, the Vietnamese Catholic Church in the South experienced a time of great repression and persecution: confiscation of the vast number of the Church (schools, religious institutions, hospitals, orphanages, printing houses, etc.), expulsion of all missionaries and the apostolic nuncio, imprisonment of the auxiliary bishop of Saigon, closure of all seminaries from 1975 to 1986, incarceration of priests in “re-education camps” where they are imprisoned with intellectuals, politicians, soldiers, and all those who had collaborated with the South Vietnamese regime, etc. By the late 1990s, Catholics were being allowed to worship and make pilgrimages to holy places but social and charitable works remained strictly under supervision of the government. At the same time, the government gradually promoted better diplomatic

relations with the Holy See and dozens of high-profile visits have been made between the Vatican and Hanoi (Nguyen 2010: 13).

Against the backdrop of this tension of Church-State relations, took place land disputes between Catholic Church and Vietnamese government during the period 2008–2009. The aim is first to attempt to analyze the process of communication by new media run by Vietnamese Catholics actors in a specific context of severe control of media in general, and online media in particular, by Vietnamese communist State; second, to consider the impacts of this religiously-informed communication over the wider social and political aspects in Vietnamese society with regard to democratic objectives.

Let's start our analysis with a summary of what happened.

In recent years friction has arisen between church and state over land ownership of confiscated property. In late 2007 and continuing throughout 2008, for example, the Catholic Church in Hanoi and local government authorities became embroiled in a dispute over land claimed by Thai Hoa parish. At the same time, Catholics also laid claim to property used by the former Vatican representative in Hanoi. Local officials rejected these claims and this sparked mass protests in the form of prayer vigils and other religious ceremonies. Special riot police were sent in to isolate the protestors and blue-shirted Revolutionary Youth gangs were given the go ahead to attack Catholics (Dang 2009h). In the end local authorities resorted to heavy-handed tactics to resolve the matter. Under the protection of police religious structures set up by parishioners were removed and bulldozers were sent to convert the contested land into two public parks. Eight Catholics parishioners were tried and convicted for disturbing public order and destruction of property but were given suspended sentences and placed on probation (Stocking 2009d). Their convictions were upheld on appeal. (Thayer 2009 :53)

The question that we could ask is how it is possible for VietCatholic News website to cover these two protests in Hanoi while Vietnamese government exerts a strict control over media. What is interesting to know, it is the fact that “without solid editorial guidelines, but with a newsgathering network of over 200 Catholic volunteers in Vietnam and abroad, VietCatholic’s content (news reports mixed with personal commentaries and also overtly religious images and video) attracted over 8 million page impressions in just three months during the demonstrations. It has become a first-hand source of news leads and original images cited and used by many other international organisations” (Nguyen 2010: 2).

The analysis of Nguyen Thanh Giang (2010) has already provided some important insights to understand how this US-based Vietnamese Catholic media works. Indeed, firstly, he underlined the advantages of VietCatholic’s editorial structure: “very flexible” (*Ibid.* 9), constituted with “a network of volunteers” (priests, parishioners, etc.) who are present in various locations, capable of newsgathering without government permit (*Ibid.* 10). Secondly, VietCatholic website is “one of the first Vietnamese language websites in the United States,” an example of “alternative online community of like-minded peers,” in this case, Vietnamese Catholics in the United States. This values-sharing help Vietcatholic’s editors build “a strong sense of community” among them (*Ibid.* 11). Moreover, this media draws its force from a transnational dimension, with a multilingualistic and multinational method of work. Thirdly, with regard to contents and language, Vietcatholics is characterized by “a

high degree of editorial engagement of the reporting team in the events and a lack of impartiality, bordering on explicit agitation as shown by the use of religious symbols and language" (*Ibid.* 19). It is worth to mention here that text-based stories are combined with images, clips, but also with petitions, open letters and poems.

It is interesting, from our viewpoint, to pay attention to some key terms in media productions of Vietcatholics during their communication campaign: "Peace and Justice," "Truth and Justice," "Prayer for Peace," "Vigil of Prayer."

After analyzing this process of communication by Vietcatholics, the issue at stake here is to examine whether this event has exerted some beneficial impacts on wider Vietnamese society. Apparently, the Catholic Church seems have lost: no lands returned, some Catholic believers citizens are put in prison, resignation of Archbishop Ngo Quang Kiet, to cite just some majors "failures." Moreover, "the state also responded to Catholic land protests by an unprecedented campaign of vilification in the state media, gang assaults on priests and Catholic parishioners, and by blocking Catholic websites" (*Thayer op.cit:* 55).

But, paradoxically, "gains" and "benefits" are more long-termed and maybe unexpected. Indeed, Vietnamese Catholic digital communication has contributed to open up spaces for citizen expression and contestation within an authoritarian regime of contemporary Vietnam. In this perspective, Carlyle A. Thayer – a professor of Politics specialized in Vietnam's Politics, argued that "The Catholic protests over land ownership in 2009 represented a challenge to the rational-legal basis of regime legitimacy" (*Ibid.* 54). By promoting an "activated citizenship" ([Cavatorta 2012](#)), these faith-based activists attempted to "translate" their religious values ("Justice," "Truth," etc.) into secular aims ("human rights," "freedom of expression," "democracy," "religious freedom," etc.) for a more open and pluralized Vietnamese society. For Nguyen Thanh-Giang, "the success of websites such as VietCatholic News has indicated that alternative religious press, web portals and television have a potential to form the Vietnamese media landscape in the future" ([2010: 31–32](#)). Undoubtedly, these political implications of Vietnamese Catholic communication by new media have had significant repercussions on the whole Vietnamese population in terms of inspirations and "ways of doing" in their struggle for a more just society.

This link between "prayer for justice" by believing citizens and civil movement of combat for "justice" leads to the necessity to reimagine a possibility of dialogue between the religious and the secular. Could this perspective of dialogue be opened by the mediation and mediatization of the social sacred?

Discussions: Could Sacred Forms Be a Perspective of Dialogue Between the Religious and the Secular in Our Contemporary Complex Societies?

At this step of analysis, we are led to discuss a perspective that seems enriching and productive for our present-day complex societies: actually, in our plural and complex societies, how to integrate all citizens in the pursuit of common good in the public life, whether they are believing citizens or nonbelieving citizens?

Drawing on Matthew Francis and Kim Knott's work (2015), we could explore the sacred as a resource for bridging the gap between the religious and the secular. In that perspective, this "social sacred" will act, as David Martin (2008) suggests, as a "mediating notion of wisdom, or practical reason," By this way, when engaging with a naming and a reflection on the sacred in the modern world, as David Lynch (2011) calls for it, we will be able to discern "the light and shadow of the Sacred" in our social life.

If we try to apply Lynch's definition of the sacred as previously mentioned ("what people collectively experience as absolute, noncontingent realities which present normative claims over the meanings and conduct of social life"), we will realize that two social phenomena that we analyzed in our cases studies included "mediatization of the sacred forms." Actually, the social circulation of the slogan "Pray for Paris" highlighted, around this explicitly formulation, sacred forms such as "life," "peace," "solidarity," or "fraternity." What is greatly significant here is the fact that these sacred forms could be recognized as it is by both religious citizens and secular citizens. For the Vietnamese Catholic digital communication on land dispute issues, "sacred forms" could be "justice," "truth," "freedom of thought and expression," that is what is generally named "human rights." Again, these "human rights" as "sacred forms" of our late modern society could be accepted by religious camp, since the philosophy of human rights originates in the Christian notion of natural law (see Habermas and Ratzinger 2006: 24); and secular camp, since seventeenth- and eighteenth-century secular philosophy forms the most important basis for the concept of human rights (*Ibid.*). Finally, it is undeniable that these "sacred forms" have been widely mediated by new media: mainly by social media in the first phenomenon; and mainly by website in the second one. Hence, our two cases studies confirm Lynch's statement "All sacred forms are mediated" (Lynch 2012: 87).

From a more political point of view, facing with current diverse radicalisms of all kinds in the world, our chapter attempts to argue for the political "virtue" of working on the category of the sacred, because we believe, as Francis & Knott put is, that "recognizing the sacred as both secular and religious opens up constructive potential for serious democratic debate between differing ideological camps."

Conclusion

To conclude, this chapter aims to highlight the importance of studying religion within digital culture, through the mutual interactions between religion, digital media, and politics, which represent a vibrant future of Internet Studies.

By this ongoing study, we aim at developing a critical and constructive category of "sacred forms" as they are at work in our postsecular and not-yet-desacralized society. We hold that this "*in-between*" category is fecund and heuristic, since it allows to identify and favor a *productive tension* between two seemingly dichotomous categories, namely the religious and the secular, for example, between the two following statements, one from a religious text (The Bible) and the other from a political text:

God created mankind in his image; in the image of God he created them; male and female, he created them. (Genesis 1: 27)

We hold these truths to be sacred and undeniable; that all men are created equal. . . . (Thomas Jefferson, first draft of the Declaration of Independence, 1776)

Hence, reflecting and working on contemporary “sacred forms” means entering into a spirit of dialogue between two horizons, “earthly horizon” of political realm and “heavenly horizon” of religious realm. It also means recognizing the inherent tension between two orders “repay to Caesar what belongs to Caesar and to God what belongs to God” (Mathew 22: 21). But, engaging with this dialogue seems a necessity, an eminently political act for today society, as Gershom Scholem calls for it: “Among the modern societies, only those that are able to introduce into the secular domain the essential contents of their religious traditions which point beyond the merely human realm will also be able to rescue the substance of the human” (Habermas 1978: 142, cited by Reder and Schmidt 2010: 5). This call for “introducing” the religious to the secular societies is an act of communication *par excellence*, which requires, as always, a process of mediation. If religion matters for the whole society, media and mediation matter too. In this perspective, new media will surely have their political role.

References

- Abuza Z (2015) Stifling the public sphere: media and civil Society in Vietnam. National Endowment for Democracy, Washington, DC
- Baubérot J (2004) Laïcité 1905-2005, entre passion et raison. Paris: Le Seuil, “La couleur des idées”
- Buddenbaum Judith M. Religion and the Media. Oxford Bibliographies. Last visited 17 July 2017. Online at <http://www.oxfordbibliographies.com/view/document/obo-9780199756841/obo-9780199756841-0097.xml>
- Calhoun C (2011) Afterword: religion’s many powers. In: Butler J, Habermas J, Taylor C, West C (eds) The power of religion in the public sphere, Edited by Mendieta E, Van Antwerpen J, Afterword by Craig Calhoun, Columbia University Press, New York, pp 118–134
- Campbell HA (dir) (2013) Digital religion, understanding religious practice in new media worlds. Routledge, New York
- Cavatorta F (2012) Civil society activism under authoritarian constraints. In: Civil society activism under authoritarian rule: a comparative perspective. Routledge, London and New York, pp 1–12
- Courtade P, Saint-Martin I (2016) L’expression du religieux dans la sphère publique. Comparaisons internationales. Paris: La Documentation française
- Douyère D et al (2015) Les religions au temps du numérique, tic&société [En ligne], vol 9, n 1–2, 2ème semestre 2015, mis en ligne le 08 janvier 2016. <https://tictsociete.revues.org/1820>
- Douyère D (2016) Le Christianisme en communication(s). In: et al. (ed) Communication & langages, vol 2016. Numéro, Presses Universitaires de France, Paris, p 189
- Duteil-Ogata F, Jonveaux I, Kuczynski L, Nizard S (dir) (2015) Le religieux sur internet. AFSR, L’Harmattan, Paris
- Francis M, Knott K (2015) Return? It never left: exploring the “sacred” as a resource for bridging the gap between the religious and the secular. In: Kutz C, Riss H, Roy O (eds) Religious norms in the public sphere: proceedings of a conference held at UC Berkeley on May 6–7, 2011. European University Institute, Florence, pp 48–57, 10 p

- Gillespie M, Herbert DEJ, Greenhill A (eds) (2013) Social Media and religious change. De Gruyter, Berlin/Boston
- Habermas J (1978) Politik, Kunst, Religion: Essays über zeitgenössische Philosophen. Stuggart, Reclam
- Habermas J, Ratzinger J (2006) The dialectics of secularization. On reason and religion. Ignatius Press, San Francisco
- Hansen P (2005) The Vietnamese state, the Catholic Church and the law. In: Gillespie J, Nicholson P (eds) Asian socialism and legal change: the dynamics of Vietnamese and Chinese reform. Asian Pacific Press, Canberra, pp 310–334
- Haynes J (2005) Chapter 15. Religion and politics. In: Woodhead L, Partridge C, Kawanami H (eds) Religion in the modern world: traditions and transformations. Routledge, London, pp 365–383
- Hjarvard S (2008a) The mediatization of religion: a theory of the media as agents of religious change. Northen Lights 6:9–26
- Hjarvard S (2008b) The mediatization of society: a theory of the media as agents of social and cultural change. Nordicom Rev 29(105):34
- Hoang AN (2016) “PrayforParis” de la performance communicative d'un hashtag au questionnement de la place de religions dans la sphère publique”, In: Religions, laïcités et sociétés au tournant des humanités numériques, Actes du 3è colloque international ComSymbol. Université Paul-Valéry Montpellier, Montpellier, 3, 9–10 Nov 2016
- Hoover SM (2006) Religion in the media age. Routledge, London
- Hope Cheong P, Fischer-Nielsen P, Gelfgren S, Ess C (2012) Digital religion, social media and culture: perspectives, practices and futures. Peter Lang, New York
- Hovdalen O (2011) Post-secular consensus? On the Munich-dialogue between Joseph Ratzinger and Jürgen Habermas. Aust eJ Theol 18(2):107–116
- Jeanneret Y (2015) Critique de la trivialité: Les médiations de la communication, enjeu de pouvoir. Editions non standard, Paris
- Jullien F (2012) “L'écart et l'entre. Ou comment penser l'altérité”, FMSH-WP-2012-03. 2012. halshs-00677232. <https://halshs.archives-ouvertes.fr/halshs-00677232>
- Lynch G (2011) Mediation of sacred forms. Oxford University Press
- Lynch G (2012) The sacred in the modern world: a cultural sociological approach. Oxford University Press, Oxford
- Lundby K (2012) Theoretical frameworks for approaching religion and new media. In: Campbell HA (ed) Digital religion. Understanding religious practice in new media worlds. Routledge, London, pp 225–237
- Mahan JH (2014) Media, religion and culture: an introduction. Routledge, London
- Marechal D, MÉadel C, Veyrat-Masson I (2011) Communiquer le sacré. Le Temps des Médias, vol 17. Nouveau Monde éd., Paris
- Martin D (2008) The religious and the political. In: Barker E (ed) The centrality of religion in social life, essays in Honour of James A. Beckford. Ashgate, Farnham, pp 161–174
- Martin-Barbero J (1993) Communication, culture and hegemony: from the media to mediations. SAGE Publications Ltd, London, Newbury Park
- Nguyen T-G (2010) When lack of impartiality makes an impact: a comparative study of VietCatholic and the BBC. Reuters Institute for the Study of Journalism, University of Oxford, Oxford
- Reder M, Schmidt J (2010) Habermas and religion. In: An awareness of what is missing. Faith and reason in a Post-Secular Age. Polity Press, Habermas et al, pp 1–14
- Stasi B (2004) Commission de réflexion sur l'application du principe de laïcité dans la République. Paris, La Documentation française: Présidence de la République
- Taylor P (2008) Modernity and Re-enchantment in Post-revolutionary Vietnam. In: Taylor P (ed) Modernity and Re-enchantment: religion in Post-revolutionary Vietnam. Lexington Books, Rowman and Littlefield, Lanham; [2007] Institute of Southeast Asian Studies (ISEAS), Singapore, pp 1–56

- Thayer CA (2009) Political legitimacy of Vietnam's one party-state: challenges and responses. *J Curr Southeast Asian Aff* 28(4):47–70
- Thayer CA (2014) The apparatus of authoritarian rule in Vietnam. In: London JD (ed) *Politics in contemporary Vietnam*. Palgrave Macmillan, Basingstoke
- Willaime J-P (2008) The paradoxes of Laïcité in France. In: Barker E (ed) *The centrality of religion in social life, essays in Honour of James A. Beckford*. Ashgate, Farnham, pp 41–51
- Willaime J-P (2016) Les bénéfices démocratiques d'une laïcité inclusive. In: Courtade P, Saint-Martin I (eds) *L'expression du religieux dans la sphère publique. Comparaisons internationales*. La Documentation française, Paris, pp 193–204
- UNESCO (2016) Social media and youth radicalization in digital age. Background Note, online: document http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/news/background_social_media_radicalization.pdf



Big Capta?

42

Jeremy Hunsinger

Contents

Introduction	768
A Few Other Problems with Data	772
The Other Modes of Information	775
Sumpta as Capta	777
Capta as Critique of “Data”: Discussion	778
Critiques of Capta: Discussion	779
Big Capta?	780
Conclusions	781
References	782

Abstract

This chapter is a handbook chapter more than anything else. It is intended to inform, argue, and provide “tools to enable you” in your research. To these ends, it presents a critique that is both contemporary and historical of the concept of “data,” providing you some paths to move forward with thinking about capta or perhaps other terms that are more appropriate than data. This chapter suggests that “data” is a strategically chosen term which intentionally or not allows some researchers to approach their information as if it did not refer to human subjects or other subjects in the world. Big data treats humans as objects and that is an ethical problem. Capta is one conceptualization that we can use to resist our objectification and could lead to more ethical information usage.

Keywords

Capta · Data · Data ethics · Information · Knowledge · Distributed web

J. Hunsinger (✉)

Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada
e-mail: jhunsinger@wlu.ca

Introduction

Language, word choices, definitions, and conceptualization are central to ethics. Many of the world's greatest evils center around problems that originate in these playful arenas of thought. People have tried to define their problems away such as global warming, tried to define other people's humanity or rights away, and otherwise tried to use language to terrible and horrific effects and sometimes to lesser problematic effects. Traditions, cultures, societies, contexts, etc. play parts in these ecologies of minds and actions that form our ethics. This chapter engages an arena of growing concern in which the words we use and the concepts that we use are transforming our world and have significant implications, now and in the future. In the end, the challenge of this chapter is to encourage people to "think differently" and perhaps to use different terms.

Big data, data science, everything is data, etc. have been framing hegemonic research discourse for the last decade or so. The Internet is changing into a more consumer-oriented Internet in part to the growing effects of big data, and a socially oriented Internet built on the new distributed web/blockchain systems is slowly being constructed in resistance. One reason for this fragmentation is the way big data treats subjects, the way it treats humans/consumers/political people, etc. Big data objectifies and reduces us; causing people to develop and implement alternative technologies such as the distributed web. If we want to keep a more unified Internet, then we should look at other ways of thinking about data on the Internet and elsewhere.

We produce far too much information to generate a meaningful or interpretable human understanding of it. Given that humans have a hard time comprehending a billion, that we have brontobytes of information being accreted has brought about new needs to interpret and understand this information. Because of those needs, new techniques arose, and those techniques needed a name. Arguably because of the tendency of all information to be called data, they took the name "big data," and "data science" became a field. This chapter suggests that "data" is a dated, positivist, and strategically chosen term which intentionally or not allows some researchers to approach their information as if it did not refer to human subjects or other subjects in the world. Big data treats humans as objects and that is an ethical problem. It treats data as if it were "raw," "brute," or "given" by the natural world. "This point can be related directly to the definition of data that has been used here. In settings where data is not obtained from 'raw' sources (the physical world), it is nevertheless treated 'as if' it were raw (in relation to human behaviour)" (Schroeder 2014). And in treating us as raw sources or as "abstract units," big data creates significant ethical concerns (Schroeder 2014). Granted "data" ethics requires a deeply ethical position to be held regarding subjects of research; but the word "data" is the core of the problem, we can use "data ethics" as a stop-gap, but the problem starts with the concept. The conceptualization "data" limits of the extensibility of subjectivity through the information that is "big data" specifically limiting the cognitive, bodily, material, and informational forms (Guattari 1995, 2000). This chapter argues that most of what we call data in big data is *capta* and because it is *capta*, recognizing the

depth of the subjects in the information will be easier and the ethical issues will be easier to prioritize. Ethics needs to come first because as Kitchin argues, “. . . new data analysis seek to gain insights ‘born from the data’” (Kitchin 2014). Capta helps us realize that the insights are never “born of the data” but they are born from people. The data is part of a long intermixing of subjects and their assemblages to reflexively construct the meaning through and in the assemblages; data does not arise out of the void or out of nature; it arises out of peoples, knowledges, and technics (Delanda 2006; Guattari 1995; Law 2004). Capta makes it easier to realize what we are not discovering data as new, but this “data” was developed by those who made it. This data is constructed without the unity, stability, or other assumptions of normality that data science might require (Kitchin 2014; Shaw 2015). In short, the data of “big data” is always prefigured by thought, knowledge, design, technics, and other data. It isn’t data at all, just a form of information.

Paralleling Zwitter, the ethics of big “data” tends to come into play in three different stages: data collection, data archiving and analysis, and data visualization (Zwitter 2014). Each of these deals with data as either facts or known objective things. This object or fact centeredness simplifies ethics as there would be no research subjects internal to the analysis. However, we are not dealing with data; we are dealing with capta, as capta prefigures the collection, what is archived, and what is analyzed. Because it is capta and not data, we must treat the data as at least invested in or by subjects. Whether those invested are researchers, research subjects, or other assemblages of subjects, it doesn’t matter because the capta now represents them and their interests (Guattari 1995, 2000).

Conceptualizations matter, much like language matters. Power and knowledge flow through both and both structure our reality. Because of the flows of power and knowledge, when presented with a misconceptualization like “big data,” we should resist it and reframe it. Data alone is a poor, though traditional, conceptualization of one type of information. It is an overly broad and underspecified concept. According to Schroeder, data has three characteristics: (1) it belongs to the object investigated; (2) it exists before analysis; and (3) it is the most divisible or atomized unit of analysis (Schroeder 2014). Data then is a part of something extant in the world, which can be analyzed, and has units. Schroeder makes an interesting point citing Hacking citing, “data are made, but as a good first approximation, the making and taking come before interpreting” (Hacking 1992) to argue that data come before interpretation. In some respects, Hacking and Schroeder suggest that the system of analysis, the machines for capture, etc. all come before the data is “made.” Usually the machines are “made” for the data, so there must be some interpretation of the data and its possibilities before the data exists. There really is no “data” before its assemblage though. “Put another way, according to Horkheimer there is no coherent formulation available for a notion of an object that is not already constituted as that object by the interpretative activity of taking it as an object of study”(Rush 2004). There must be an interpretation before you have an object, so there can’t be “data” in its “pure,” “raw,” or “brute” informational construction. There must at least be a model for the data to exist before the data exists; there must be a prefiguration before the figuration. The model and the thought involved would

involve interpretation or at least knowledge of a sort. Knowledge and interpretation are the start of *capta*, not data, and interpretation is the start of the mixing of subjectivities with histories and the “objectivities” of the world as they exist (Guattari 1995, 2000). You can, of course, assume the priority of data axiologically; but that is similar to assuming the Flying Spaghetti Monster axiologically.

Data as a term seems to have hegemonically captured all references to information, knowledge, and even some wisdom, but there are more types of information than data, and knowledge/wisdom are not data at all, though knowledge/wisdom may have relationships to information and/or data. Data and information have as much relation to non-knowledge as to knowledge (Unesco 2005). The cultural and linguistic phenomena of the universalization of data parallels the rise of particular academic disciplines and their understanding of being/ontology. The ascendant hegemonies of disciplines like engineering and computational sciences with their idealism and objectivist orientations have provided a traditional grounding for this universalization of data. These disciplines have given us much nuance and development in the world, but the universalization of the concept of data goes against nuance and development.

Regarding *capta*, this chapter owes a great deal to the work of Joanna Drucker and her work on *capta*. Her work was the originating idea for this chapter, but this chapter attempts to build synergistically on her work. In her work she states:

This requires first and foremost that we reconceive all data as capta. Differences in the etymological roots of the terms data and *capta* make the distinction between constructivist and realist approaches clear. *Capta* is ‘taken’ actively while data is assumed to be a ‘given’ able to be recorded and observed. From this distinction, a world of differences arises. Humanistic inquiry acknowledges the situated, partial, and constitutive character of knowledge production, the recognition that knowledge is constructed, taken, not merely given as a natural representation of pre-existing fact, (Drucker 2011)

Drucker’s position is not the only position present in the literature. The literature is rife with attempts to differentiate data from other forms of information. One field with some influence on the data vs. *capta* debate is information management. Information management has an appreciation of data as “facts” or objects in the world and *capta* as a result of selection of specific data or the data that we give our attention (Checkland and Holwell 1998; Quisbert et al. 2009). *Capta* as they describe it is part of the process of data becoming information. *Capta* is the stage where humans have taken an interest in some data. In their model, the stages develop from data which becomes *capta* which becomes information which becomes knowledge. Their model seems like a very standard modification of the classic DIKW pyramid: data at the bottom, then information, then knowledge, and then wisdom. Of course, as one might imagine, the epistemological dream of such a pyramid is unrealizable, definitely unreal, and perhaps surreal. In social practice, which is what generates knowledge, information can only come after knowledge (Tuomi 1999). The information emerges from the intermixing of cognition, the design of systems to process information, and the sociocultural-aesthetic ecological assemblages around them

(Guattari 1995, 2000). Without prior context, information doesn't exist regarding information processing, and data doesn't exist at all, because data would have vested interests based on prior knowledge. So, while DIKW might be what we teach first-year students or new people in some disciplines, the expectation is to learn this epistemological dream and then surpass it because of the practical and social experience which shows it to be pragmatically untrue.

Checkland and Howell's model while slightly different from the DIKW has the same problems and introduces a new challenge. If we approach their mereological construct critically, it is easy to see capta and data are already information and knowledge prefigures both. You can't ask the questions from capta or data without already knowing and interpreting the capta or data. Information which is to be derived from either data or capta requires the data or capta to be information already. The process they describe transforming data into capta is one of humans taking an interest (Checkland and Holwell 1998). The process of converting capta to information is a process of asking questions and structuring the capta about those questions (Checkland and Holwell 1998). Here again, the problem arises of "what comes before"; requires there to at least a superficial knowledge of the capta and data itself. The process which leads to knowledge must start with experience and knowledge, as such we never really have data, we only have the information because we have taken an interest, which is capta in their model.

The reason they are making such a mereological mess is that the conceptualization of capta and data is entirely driven by privileging the objective definition of data. It is part of the empirical ideology found in big data studies and related fields. Contrary to their ideology, data is not "just there," natural, and otherwise without any real ethical concern. Data-oriented fields benefit immensely from this construction of data as objective, just there, or otherwise without ethical concern, because it removes the subjects of research and absolves the responsibility of the researcher, who is just dealing with "things." It is far easier for research to progress if they do not have to worry about research subjects and the ethical implications thereof. Capta is already about humans and human subjects and thus requires some ethical consideration.

Checkland and Howell imply that knowledge is in the knower, but information may be external (Checkland and Holwell 1998). This is logically problematic; if information is internal, then it must be interpreted. When it is interpreted, then it becomes knowledge, but interpretation doesn't necessarily make it into knowledge, as people may be wrong and it may become non-knowledge or it may become akin to what Serres calls "La Belle Noiseuse" or perhaps some other signal (Checkland and Holwell 1998; Serres 1995). Capta too must be partly internal to the knower as the knower is a subject, so some information must be internal to the knower and not knowledge. Information when analyzed and interpreted may generate knowledge in the knower, and given there really is no external experience of data only internal experience, which makes it capta. Even if there is a nonhuman system, it is a construction of human interests, thus really is only capta, because every other system is constructed to produce capta.

A Few Other Problems with Data

Data and datafication are universalizing hegemonic encapsulating concepts. They should inspire immediate doubt as to whether something is data, because frequently what we refer to as data is not. The universalization of data implies a “crude naturalization” of information. In other words, we imply “data” is just there, given to us by nature (Lamprecht 1935). This “crude naturalization” perpetuates the false understanding of the nature of data. The nature of data is not “natural,” or a natural fact, but data is merely information, so it has lost any relationship to fact. The facticity of data has long lost to mere representativeness. The information gathered with sensors from nature is not “data” nor fact, as much as capta because the sensors were designed to measure/create information from the various assemblages with which they interact (Delanda 2006; Law 2004). The sensors predesignate what is interesting and capture/take information which eventually will be interpreted anew by humans. The “crude naturalization” is an ideology that frequently happens after and before the fact, as the information is reimagined as data. It is related to a form of primitive empiricism of our world that has long since been surpassed as a naivette, so why does this form of empiricism still dominate our thought on information? I suspect that it is because “data” has become easy to use, whereas other models of information are less easy.

Data as a useful word has long had issues. Critiques of crudeness, vagueness, lack of usefulness, and others have long existed. Schiller says of data, “Without understanding of them, its(data) meaning may at any moment dissolve into vagueness and ambiguity. Verily there is much work to be done upon data before they can be used”(Schiller 1933). The vagueness and ambiguity problems are particularly problematic when the references can be anything. These problems seem intentional; this empowers people to do things with the data and deny the relations to subjects.

“Data” as a concept has been problematic for a long time. F.E.S. Schiller was presenting the problems of the use of data for all information and the confusion arising from the profligate use of the word “data” in the 1930s:

It is easy therefore to understand what terrible confusions may arise if all the data that can be alleged on all these different levels, and in all these contexts, are lumped and jumbled together in one amorphous, undiscriminated mass; and I fail to see how any intelligible or serviceable theory of knowledge can emerge from such (Schiller 1933)

Schiller argues that the mass of data causes significant problems in the conceptualization of knowledge. It also causes significant problems in the constitution of our subjectivity and the ethical requirements of processing information. One example of the problem can be found in literature. Italo Calvino’s story *World Memory* portrays the problem of the tension between the information or “data” which represents a person and the person itself (Calvino 2009). In the story, the protagonist first removes all records of the person before he removes (murders) the person (Calvino 2009). This troubling model of the datafication of life with its replacement of life with information has data becoming a better representation of us, than we are.

Baudrillard titles this the perfect crime and the final solution, where our lives are perfectly datafied and the data replaces ourselves (Baudrillard 1996). The theme of destroying people with “data” has been a theme in fiction, but with doxing and identity fraud; informational death has become a much more real possibility. If we had built our models of understanding of information on the principle that information is a part of someone’s life, part of their subjectivity, and thus part of their capacity to live and flourish, then these problematic events would have developed differently.

There is the saying, “data speaks for itself” (Anderson 2008). This saying indicates one of the problems of the field of data studies; it is that precisely “data” does not speak for itself, but someone always advocates through “data” (Dourish and Gómez Cruz 2018). Data itself is dead, without an interpreter and advocate, data says nothing, and it frequently says nothing quite loudly and expensively. However, when interpreted, then it is no longer data.

Nonetheless “data” is always about the advocates of the “data,” the economists, the statisticians, and the analysts, and the holders of certain forms of expertise with which they can speak for the data. Those experts are speaking for the “data,” legitimizing it, objectifying it, and transforming it through their own expert’s assumptions. As Bowker would have it, “Raw data is both an oxymoron and a bad idea; to the contrary, data should be cooked with care” (Bowker 2005). Raw or “brute” data doesn’t speak for itself; no data does. Data only ever speaks after many transformations and remixing by experts (Yanow 1999).

Data is frequently conceived of as a “pre-existing fact” or perhaps a “fact of nature” (Drucker 2011). For a small subset of information, this is true, but most information must be constructed, cleaned, transformed, and otherwise modified to fit into the informational and analytical systems built to contain it. Some “data” is transformed at the point of its creation, where the information gathered through sensors is gathered as quantities nonexistent in nature. Someone, frequently many someones, builds the sensor just as someone builds the data and its models. Someone is invested in the collection of this information, and they are taking/creating it for a purpose intrinsic to their subjectivity/interests/desires. In short, they want the information captured, and thus the information is capta. The category of the information might not have even existed before the notion of collecting, and even if it did exist before, mere existence doesn’t mean that the information is *a priori* and thus data. “By recognizing the always interpreted character of data we have shifted from data to capta, acknowledging the constructedness of the categories according to the uses and expectations for which they are put in service. Nations, genders, populations, and time spans are not self-evident, stable entities that exist *a priori*” (Drucker 2011). Most of the information we have about the world exists in categories we constructed. These categories are both historically contingent and contingent on our continued promotion and dissemination of these categories. Nations, genders, races, time spans, spaces, and locations are all historical, cultural, and political constructions. Sometimes they are constructed for the flourishing of humanity, justice, or some other good, sometimes merely for profit or other things that may be less good. Pollution, for instance, while a real problem in the world, is also

constructed, not constructed in its existence, but constructed in its conceptualization, measurement, and its operationalization, all of which indicate based in *capta*.

The possibility of “data” might be constructed through the concept of “observer independence” by some (Drucker 2011). Observer independence is a remnant of the old philosophical and scientific canard of “objectivity.” Mythopoetically, objectivity was constructed to solve a genuine problem, bias in knowledge and bias in the perception of knowable things. Observer independence means that regardless of who is looking, the phenomena of the assemblage of things in the world observed would be the same if all other things were to be held equal. It asserts that there is a separability/severability between the phenomena and its observation (Barad 1997; Drucker 2011). There is no real separation between the observer and the observed, but they are one system, with other relationships involved. For instance, in the sensor example above, the thing sensed, and the sensor exists in relation to each other to produce the information. Information is captured in relation to the thing observed, but the information is mediated by the sensor assemblage, which is mediated by the best engineering judgment or practical wisdom of the sensor’s designer, who has an imagination of the information produced and the object generating the information before the sensor even exists or, even if the sensor already exists, before being implemented in this system. The context of the entire system matters. Information is produced within a system which has a knowledge ecology or system of knowledge production in place; it doesn’t arise in a vacuum or any arrangement of independence.

The claim of observer-independent data was necessary for a historical period of science, but that time has passed. Karen Barad points argue that Niels Bohr recognized some of the problems of observer independence when he referred to “agencies of observation” which are the material and semiotic apparatuses around the production of information (Barad 1997). According to Barad, Bohr firmly held measurement and description were agential acts not distinguishable from each other. Both acts are creating *capta*, taking information, and making it our own (Barad 1997). Barad also holds Bohr believed there were implications for humanity being natural that denied the possibility of independence of the observer. She suggests description, and thus measurement is not of any given observer-independent reality, but of phenomena in the same system as the person observing it. The system which was designed to overcome any difference between the observer and the phenomena; the system which in part was built to make the phenomena perceivable (Barad 1997). Given the systems are in part built to specifically engage the phenomena in the program of producing information about the phenomena, it is clear they are not producing observer-independent “data,” but *capta*.

Most of the critiques of data, its origin, and its ideological foundation are fairly solid and well known. They have been around for quite some time, yet the tendency to use “data” as the dominant or hegemonic term for information still exists. It might be because most of the critiques of the term “data” are not clearly demonstrating the problems of treating subjects as objects. The use of “data” might be as I noted earlier that it is just convenient or easy to use it and not do the intellectual and research labor

involved with capta or other modes of information. ‘Data’ might also be hegemonic because very few people are educated about other words for information.

The Other Modes of Information

It is evident that the word “data” has become universalized and hegemonized in public and research discourses, used in many places where better terms exist. Data as a hegemonic term has become part of the lingua franca of science. Data is one type of information. Information may be any number of other things; acta, capta, cognata, communicata, sumpta, and inventa are sometimes closer to what we are dealing with “data” than data is. Universalized “data” as data is closer to a myth than a reality. We live in a richly descriptive universe of conceptualization with the discourse of “data” floating as a position absolving people from confronting many problems with their use of “data.” It is time to move on to use the broad array of terms available to us.

We should look very carefully about the claims we can make about data, acta, capta, cognata, communicata, sumpta, and inventa and acknowledge the reasons that data tends to be hegemonic which is for some the lack of moral or ethical claims one can make about it. We should acknowledge using the word “data” disempowers the people and institutions from which we derive “data.” In acknowledging that the use of “data” is explicitly disempowering, we are left with the question of what we should call this information. One answer is that the majority of our information should be called capta, but there are other forms of information. Some of the diverse types of information are part of common scholarly parlance, like acta, others are invented like cognata, while others like sumpta and capta have been around and are unused in many fields. In this section of the chapter, acta, cognata, communicata, and inventa will be briefly discussed to allow people to see some of the richness of possible descriptions and possible mereological array of relations.

Acta from the Latin means acts or transactions including the creation of an official record. So, acta implies something created as a record or a transaction. Acta then is information of record, where it represents the changes of the system. Much of what we currently call “data” could also be better called acta, as it records a change of state. Many databases, for example, record the changes of state and thus would be better thought of as actabases. Acta is created by either the system in question or by subjects to the system, as the acta is usually a requirement of the system. Acta has significant import to our society, governance, and general relations because it records the change of state that occurs. It records the abnormalities of a system, which then lead to considering the basis for norms and normative judgments. Acta is important to most surveillance because it denotes and records changes; this sort of record keeping is the basis of most surveillance. Data exists in surveillance also, but the data of surveillance would be the unchanging things and are not even noted, such as if we imagine a surveillance camera pointing down a hallway, the walls themselves would be data which are never mentioned unless they are graffitied

or otherwise changed. The walls are a “given.” The transaction in the halls, such as colleagues arguing, is likely *acta* and later perhaps *capta* as they are interpreted.

Hayden and Sansonnet-Hayden jokingly proposed *cognata* as an attempt to argue against *capta* and yet it still recognizes problems with data for anthropology and similar interpretive disciplines. *Cognata* acknowledges a mixing of cognition with information, much like there is with every analysis. Cognition is present in the creation, the collection, and the analysis of information. *Cognata* also entails that several other psychological factors play a part in the “cognizing” of “observation” (Hayden and Sansonnet-Hayden 2001). The humorous intent of their proposal belies the reality of the attempts at objectivity in anthropology are much like the attempts in any other field; reflexivity is about as much as one can hope, as objectivity is the real boojum (their term). In their jest against *capta*, they reify the problem of objectivity, indicating some of the normative strictures *cognata* has. Fundamentally, *cognata* would be a quasi-object (Latour 1993) or a distributed cognition indicating the inclusion of human interests in the information present, which would require more ethical diligence than if the information were merely objective data (Hunsinger 2009, 2011, 2017). *Cognata* in the surveillance example would be many parts of the current system but also the information in the prior system and the next system. *Cognata* might be what leads us to put a surveillance camera into the hallway. Indeed, empirically founded, suspicion could be called *cognata*. If we used *cognata*, we would have to recognize much more substantively the work that forethought, afterthought, and thought, in general, brings about regarding observations and computations. *Cognata* is intertwined with our own or other’s subjectivities in the past, present, and future and thus requires much more thought about its implications (Guattari 1995, 2000).

Information arising from dialogue or discussions among people is called *communicata* (Walsh 1989). *Communicata*, as Walsh describes it, is what results from the added inputs that one might find coming from dialogue in government panels or citizen science endeavors. Much social research and all science arise from *communicata* in some respect because it is part of “the great conversation” which is contemporary and past systems of knowledge generation and sharing. Recognizing the value of *communicata* as a dominant information type would help us overcome some of the traditional biases present in research, such as the fictum of the “lone researchers” and associated topics. While *communicata* only arises in discursive contexts in Walsh, it is possible to see how it could aid significantly in helping the public understanding of science.

A rarer mode of information is *inventa*. *Inventa* originated in Schiller’s humanism. However, *inventa* seems to have some use today to indicate the form of information that arises through practices such as the *dérive*/drift and related/unrelated undirected practices. Schiller describes it below:

We shall have to accommodate also a variety of *inventa*, things stumbled or hit upon and found, though we may feel doubtful whether the mere fact that they are somehow there, yields us any guarantee that they can be put to essential uses. (Schiller 1933)

Even though it has not been used extensively elsewhere, conceptually, it has possibilities to help us understand the processes of big data, which sometimes has inventa-like findings.

There are other modes of information and descriptions of information in our discursive world. This cursory introduction to a few of them is intended only to allow one to use them and to think about whether we should be using data as hegemonic term or whether it might be more rigorous, clearer, and more useful. Of course, data does have fewer ethical considerations due to its “objective” and “factitious” ideological construction; but the question then should be whether intentionally or not we should be using the ideologies of language to avoid ethical issues.

Sumpta as Capta

With the less established modes of information developed as possibilities above, we can return to the primary argument of this chapter. Capta is information which is taken. It is not a new idea and keeps returning to information science, data science, and related fields because it brings insights into the field’s practices and modes of thought. Before the data sciences arose, and in the early days of statistical sciences, there was some debate in the philosophy of psychology and philosophy of social science about the nature of “data”; some of the remnants of this debate still exists in current discussion, but much has been forgotten, not necessarily decided, just overlooked as debates changed. One concept from the early days is significantly parallel to capta and sheds light on how we might understand the capta/data issue. Sumpta is this concept; Schiller describes it below.

Let us distinguish, therefore, data, things given, from sumpta, things taken. Let us observe moreover that there has been a great deal of taking for granted and selecting, before accepted data could reach their present shape. We may wonder whether there are such things as pure data anywhere to be encountered or obtained, by hook or by crook. It is always permissible to inquire what assumption of data (if any) serves any useful purpose in any particular inquiry. (Schiller 1933)

If the information is useful, then in Schiller’s terminology, it is sumpta. The usefulness of something is a matter of us taking and imbuing it with importance. By making things useful, or by recognizing the usefulness of something, we transform it from something out there in the world called data, to something internal to us, which is called sumpta. It is the difference between a random rock in outer space and your pet rock or paperweight rock on your desk. The latter has a use. The former has only an existence. Data for Schiller rarely exists in the humanistic or social sphere; almost everything is sumpta. Almost everything has meaning to the humans who use it and makes something sumpta and not data. It is when we “take it in.”

Sumpta is very close to capta, as it means “that which one takes” (Russo 1957). What is significant is the portrayal of sumpta in science and logic, because logic starts with sumpta (Bisbee 1930). Similarly, scientific data are always sumpta according to Schiller (1933). Thus, if logic and scientific information is always sumpta, then computing must start with sumpta too.

Capta as Critique of “Data”: Discussion

Return to the supposition the fields centered on data such as information management take. They say capta is just data that humans find interesting (Checkland and Holwell 1998). However, while that is a disciplinary construction of capta, it is problematic because capta is not necessarily data, nor does data or information necessarily have a relation to knowledge, as it may play into non-knowledge.

The standard understanding of data is Latin for “given,” data from datus, in the Latin which means to give, to offer, and to concede. Data is a form of information which is given to us from either a subject or an object. It may come from the conclusion of a prior argument, or it may come from nature (Gitelman and Rosenberg 2013). The way we distinguish it from information is through its discreteness (Frith 2017; Gitelman and Rosenberg 2013). For instance, the sun can give us data about its surface using sensors which accept its radiation. These sensors produce discrete quantifications based on time, space, or other properties, and they produce the discreteness of the data from the analog state. Subjects can also give us data in theory, but this is harder to hypothesize outside of a realm of alienation because certainly, almost all the information that a human produce is either something belonging to it or alienated from it justly or unjustly. Because data, as it is generally conceived, must be something external to us, like nature, data produced by a subject, as noted above, must be naturalized and alienated from the subject. Data “given” to us by the world and our own experience of it, on the other hand is just data. As Russo explains below, data originally conceived was produced by the environment which forces it upon us to be received.

The word data, for instance, which has been current in empirical thought for some 300 years, indicates that man is passive and receptive while the environment is active. The data, given in experience, refer to the facts as they are presented to us. We don’t have any choice but to take them. (Russo 1957)

Russo’s portrayal of data shows some of the assumptions one has in using it as the hegemonic term it is today. The alternative term suggested in this chapter is capta. Capta, which is also information, but it is information that is taken, captured, or seized. It makes little sense to seize or take the information of the sun or other natural phenomena. Seizing or taking implies the information belongs to the thing. A sun is an object, an assemblage of nuclear and related ecological systems generating radiation through its processes. It would create light and thus data whether anyone was there or not. However, if we take your medical information,

perhaps your iris scan, DNA, or fingerprints, that is different, sure it can be incorrectly conceptualized as data, but there is an intersubjective relationship of taking where one thing takes the information from the other, perhaps with permission, and sometimes that information is seized legally, justly, or not. Thus, this information is capta. Most things in the natural world are not capta, but almost everything in the human world is capta.

Using capta also awakens the researcher's awareness of themselves in the process of research, specifically concerning their reflexive position as Gherardi and Turner indicate:

An openness of mind requires a faithful attention to the sensations offered in the field situation, but at the same time the inherently active part played by the investigator may be symbolized by the use of the term 'capta' rather than data (Miles and Huberman 1984) to stress the extent to which information is captured from rather than given by the social setting. (Gherardi and Turner 1987)

Capta helps us recognize the active role of the researcher, which tends to promote more ethical behavior than the passive role. If I am merely receiving the gift of data and analyzing it, I could be less inclined to consider that my engagement with the data has ethical implications to the subjects of the research, because calling the information "data" naturalizes the information and makes the subjects disappear, much like infrastructure turns invisible over time (Star 1999, 2002; Star and Bowker 1995). Capta, on the other hand, recognizes both the existence of subjects in the information, even if the subjective perspective is the researcher's and it encourages the researcher to understand the social setting of the data, according to Russo. This encouragement provides for disposition of deeper ethical considerations of the subjective relations of the data.

Critiques of Capta: Discussion

There is a critique of capta from Becker which says that nothing is given unless it is simultaneously taken (Becker 1952). This critique might seem correct for capta/data until one thinks about capta as captured or taken from someone through coercive means such as the law, bullying, or otherwise. Many things are taken, but not given, though many things are both. In nature, things can be given, but not taken too. Researchers and information systems should immediately recognize they have explicit and implicit privileges and power imbalances tend to tip the scales toward questions of information being "taken." Indeed, researchers frequently use many tools to make the research field more equal and ethical. One other critique of the idea of capta is while most of the researchers, scientists, etc. use capta that are interpretive or reflexive, capta does not work for fields that are in the special sciences or computational sciences, because the data in those fields are also objective and not relating to subjects. This critique is only accurate when the data are ideal types, generated purely by science without referent to either the scientist, the scientific

project, or any other subject in the world. Even in typical situations, such as a mathematician working on an obscure proof in number theory, this may have real implications of choice and investment of subjectivity for not only mathematician but also the people who eventually choose to do something with research. So, it is true there is data; and some information does not have any subjective relations outside of the researcher, who is trying to be idealist or objective about data, thus alienating it. Data does exist in information systems, and as far as humans become information systems to use data, then data could still exist in humans. However, as one becomes entangled with the information, manipulates it, changes it, and relates it to the researchers own perspective, information will tend to represent the researcher as well as itself, and then it becomes capta. It becomes capta because it is intrinsically interwoven with a subject.

Some things are not capta as noted above; those things, given from the natural world, internal to machines, or given as abstractions from science itself, are data. In that they are data, they don't have subjective relations beyond the choice of the researcher using them or the computer operates on them until point in which they begin to implicate or complicate other subjects, and then it too becomes capta.

Thayer reports on Laing and Einstein concerning capta.

R. D. Laing once suggested that we should call the stuff of our inquiries not ‘data’ but ‘capta’ since they are already informed at that point by our theories, our assumptions, our designs on the world, as Einstein taught. If we perceive only the products of our perceptions—as Bateson was wont to say—then neither the assumptions nor the methods of the scientist mentality are relevant to the task it has set for itself. (Thayer 1983)

The increasing inseparability of the scientist or researcher from the data is realized in the term capta. It is not an insignificant point to make that we are assemblages of interwoven/intertwined subjects, things, quasi-objects, and others, passing through various states of assemblage to accomplish separate tasks in our endeavors (Dechow and Struppa 2015; Guattari 2000; Hunsinger 2006; Latour 1993). It is hard to recognize our cross-de-individualization with machines and information in a hyper-individualized and narcissistic world, but it is there, and when recognized gives us more reasons to consider others.

Big Capta?

Big capta is an important concept to recognize for many of the issues noted above, but it also is important because it frees us from two assumptions plaguing data. It specifically indicates information is taken from somewhere and secondarily it indicates subjects were involved in the information at almost every stage of it becoming big capta. The latter should be evident because merely considering the software is designed to manage the information and deal with it. Big capta should indicate the data is molded to fit the software as much as big capta is molded to fit the algorithms. The design of big capta systems recognizes that reflexive relations in the

design of systems and algorithms are both parts of a more extensive system with profound ethical importance because it directly or indirectly involves subjects in the research, hopefully to no one's detriment. We should recognize then that with all this subject-centeredness, there will be extensive bias in the information systems, though we can frequently find people to deny it and people who claim to remove it. It would be better than instead of denying or removing it; we could admit it and use the biases for positive ethical purposes because saying the system has certain biases would at least lower the likelihood of ill-effects from those biases. Big capta is a better idea ethically than big data, or at least it should be.

Conclusions

This chapter has not been about a difference or problem between the humanities, social sciences, information sciences, and special sciences. They all have issues with conceiving of every bit of information as "data" and the increasing creep of big "data," when there is a plethora of reasons, as presented above, as to why there is so much more to information than "data." This creep of the concept across alternative conceptual spaces removes the reality around the information by making it into data which is "natural," "given," or "objective" when in truth it is "constructed," "taken," and "subjective" which is capta (Thayer 1983).

Capta can help us resolve other creeping problems too, and it is the depersonalization of everyday life in our "data" stream. It can help prevent what Schroeder calls the "...longer-term, 'creep' concerning the effects of more powerful knowledge," (Schroeder 2014) because it forces researchers and scientists using capta to consider the subjects involved significantly more than the term "data."

Sometimes, people think something being subject-oriented, as capta is, lowers its value in science. That is just misleading, because as Drucker indicates:

Capta is not an expression of idiosyncrasy, emotion, or individual quirks, but a systematic expression of information understood as constructed, as phenomena perceived according to principles of interpretation, (Drucker 2011)

That is to say, saying something is capta only means that it engages with the subject and the subject is perceived with interpretation, which should be obvious. As she says, it is not individuality, quirks, etc. that make it capta; it isn't that you have a passion for model railroads that make your measurement of rail capacity and economic performance into capta, it is that the rail capacity and economic performance have real implications for various subjects' lives. The researcher's engagement might also make it into capta, but at that point, as Drucker says, "all data is capta" (Drucker 2011).

Inarguably, changing the language and changing concepts won't necessarily alter technical cultures in the near term, but changing language and changing concepts have and will influence education and technical cultures in the long term. The change to capta seems minor, but capta requires people to think about subjects much like

data requires people to treat information as objects. This change if promoted will affect the field; one could certainly benefit those represented by or manifested in the data (Hunsinger 2013). I hope using *capta* as the primary concept for big *capta*, we would encourage those in the field to de-objectify their information, recognize its central forms of subjectivity, and use to empower those it represents as much as those manipulating, striving for a balance where everyone can flourish equitably.

“*Capta*” is the point of contention of the “distributed web” project, and many people are gaining a real sense of the effects of big “data” in their everyday Internet experiences; it is important to reprise “*capta*” once again. Using the term big *capta* and changing the conceptualization of big data to big *capta* where appropriate seem to be just a drop in the bucket to better information management, but it is a sign of change and a sign of changing. I do not expect anyone to take this essay to heart. The conceptual battle was fought in the 1930s, 1950s, 1960s, 1970s, and almost every decade; and this is yet one more salvo to start the debate. If we do not keep remembering we can discuss these ideas differently and the difference can stand as a point of resistance to some of the ethical problems, then we surely are giving up too much. Big “data” has too many implications, and this chapter has only confronted a few of them. Academics and data/information activists can consider doing things differently; they can consider *capta*.

References

- Anderson C (2008) The end of theory: the data deluge makes the scientific method obsolete. *Wired Magazine* 16.07. Wired. Retrieved from <https://www.wired.com/2008/06/pb-theory/>
- Barad K (1997) Meeting the universe halfway: realism and social constructivism without contradiction. In: Hankinson Nelson L, Nelson J (eds) Feminism, science, and the philosophy of science. Kluwer, Dordrecht
- Baudrillard J (1996) The perfect crime. Verso Books, London/New York
- Becker H (1952) Science, culture, and society. *Philos Sci* 19(4):273–287. <https://doi.org/10.1086/287212>
- Bisbee E (1930) [Review of *Logic for Use.*, by F. C. S. Schiller]. *J Philos* 27(16):439. <https://doi.org/10.2307/2016400>
- Bowker GC (2005) Memory practices in the sciences. MIT Press, Cambridge, MA
- Calvino I (2009) World memory. In: World memory (Vol. The complete cosmicomics). Penguin Classics, London, UK, pp 365–372
- Checkland P, Holwell S (1998) Information, systems, and information systems: making sense of the field. Wiley, Chichester
- Dechow DR, Struppa DC (2015) Intertwingled: the work and influence of Ted Nelson. Springer, Cham
- Delanda M (2006) A new philosophy of society: assemblage theory and social complexity. Continuum, London/New York
- Dourish P, Gómez Cruz E (2018) Datafication and data fiction: narrating data and narrating with data. *Big Data Soc* 5(2):205395171878408. <https://doi.org/10.1177/2053951718784083>
- Drucker J (2011) Humanities approaches to graphical display. *Digit Humanit Q* 005(1)

- Frith J (2017) Big data, technical communication, and the smart city. *J Bus Tech Commun* 31(2):168–187. <https://doi.org/10.1177/1050651916682285>
- Gherardi S, Turner B (1987) Real men don't collect soft data, vol 13. Università degli Studi di Trento. Dipartimento di Politica Sociale, Trento. Retrieved from <http://www.unitn.it/sociologia/8701/quaderini-del-dipartimento>
- Gitelman L, Rosenberg D (2013) Data before the fact. In: Raw data is an oxymoron. MIT Press, London, pp 15–40
- Guattari F (1995) *Chaosmosis: an ethicoaesthetic paradigm*. Indiana University Press, Bloomington
- Guattari F (2000) *The three ecologies*. Athlone Press, London
- Hacking I (1992) The self-vindication of the laboratory sciences. In: Pickering A (ed) *Science as practice and culture*. University of Chicago Press, Chicago, pp 29–64
- Hayden B, Sansonnet-Hayden H (2001) Cognata, capta and data: hunting for meaning. *SAA Archaeol Rec* 1(3):34–36
- Hunsinger J (2006) The political economy of the internet: contesting capitalism, the spirit of informationalism, and virtual learning environments. In: *The international handbook of virtual learning environments*. Springer, pp 189–206
- Hunsinger J (2009) Knowledge and cultural production in the context of contemporary capitalism: a response to Wittkower. *Fast Capitalism* 4(1). Retrieved from http://www.uta.edu/huma/agger/fastcapitalism/4_1/hunsinger.html
- Hunsinger J (2011) Interzoning in after zoning out on infrastructure. *M/C J* 14(5). <http://journal.media-culture.org.au/index.php/mcjournal/article/view/425>
- Hunsinger J (2013) Interface and infrastructure of social media. In: *The handbook of social media*. Routledge, New York, pp 5–18
- Hunsinger J (2017) Hacking together globally. *Digit Cult Soc* 3(1):95–108
- Kitchin R (2014) Big Data, new epistemologies and paradigm shifts. *Big Data Soc* 1(1):205395171452848. <https://doi.org/10.1177/2053951714528481>
- Lamprecht SP (1935) [Review of must philosophers disagree? and Other essays in popular philosophy., by F. C. S. Schiller]. *Philos Rev* 44(4):397. <https://doi.org/10.2307/2179997>
- Latour B (1993) We have never been modern. Harvard University Press, Cambridge, MA
- Law J (2004) After method: mess in social science research. Routledge, London
- Quisbert H, Korenkova M, Hägerfors A (2009) Towards a definition of digital information preservation object. In: Sicilia M-A, Lytras MD (eds) *Metadata and semantics*. Springer, Boston, pp 11–22
- Rush F (2004) *The Cambridge companion to critical theory*. Cambridge University Press, Cambridge, UK
- Russo S (1957) Data vs. Capta or Sumpta. *Am Psychol* 12(5):283–284. <https://doi.org/10.1037/h0039881>
- Schiller FCS (1933) Data, datives, and ablatives. *J Philos* 30(18):488. <https://doi.org/10.2307/2016787>
- Schroeder R (2014) Big Data and the brave new world of social media research. *Big Data Soc* 1(2):205395171456319. <https://doi.org/10.1177/2053951714563194>
- Serres M (1995) *Genesis*. University of Michigan Press, Ann Arbor
- Shaw R (2015) Big Data and reality. *Big Data Soc* 2(2):205395171560887. <https://doi.org/10.1177/2053951715608877>
- Star SL (1999) The ethnography of infrastructure. *Am Behav Sci* 43(3):377–391
- Star SL (2002) Infrastructure and ethnographic practice: working on the fringes. *Scand J Inf Syst* 14(2):107–122
- Star SL, Bowker GC (1995) Work and infrastructure. *Communications of the ACM*. Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=2221813188439668169 <http://portal.acm.org/citation.cfm?id=223248.278461>
- Thayer L (1983) On “doing” research and “explaining” things. *J Commun* 33(3):80–91. <https://doi.org/10.1111/j.1460-2466.1983.tb02409.x>

- Tuomi I (1999) Data is more than knowledge: implications of the reversed knowledge hierarchy for knowledge management and organizational memory. *J Manag Inf Syst* 16(3):103–117
- Unesco (2005) Towards knowledge societies. Imprimerie Corlet, Condé-sur-Noireau/Unesco Publishing, France
- Walsh RT (1989) Do research reports in mainstream feminist psychology journals reflect feminist values? *Psychol Women Q* 13(4):433–444. <https://doi.org/10.1111/j.1471-6402.1989.tb01012.x>
- Yanow D (1999) Conducting interpretive policy analysis (qualitative research methods). Sage, Los Angeles
- Zwitter A (2014) Big Data ethics. *Big Data Soc* 1(2):205395171455925. <https://doi.org/10.1177/2053951714559253>



Digitally Researching Islam

43

Mohammed Ibahrine

Contents

Introduction	786
Perspectives on the Internet as an Object of Study	787
Islam and Internet Research	788
Conclusion	795
References	797

Abstract

The chapter provides an overview of the current research issues, major trends, and future challenges to the Internet research in the Arab region. There is a striking lack of social science based-Internet research literature that has systematically examined the Internet' impacts and implications to culture, politics, and religion. However, in the context of the Arab Spring, there is a burgeoning interest among social scientists to examine the role of social media in triggering political change. The source materials include secondary information from previous studies and existing statistics. This chapter brings in new perspectives in the debate about the recent trends and that the Internet research is somewhat lacking an empirical focus and theoretical foundation. Understanding the relationship between Islam and digital platforms will increase the understanding of the larger cultural shifts at work within traditionally opaque societies. The core argument of this chapter is that digital technologies have the potential to change people's religiosity and practices of piety. Disruptive technologies will challenge and change the future of Internet research in the region. Change and control will arguably control the future of Internet research; change of technology and control of the political and

M. Ibahrine (✉)

Department of Mass Communication, American University of Sharjah, Sharjah,
United Arab Emirates
e-mail: mibahrine@aus.edu

religious powers. A prominent challenge is the imminently emerging technologies including virtual reality, augmented reality, the Internet of Things, and artificial intelligence.

Keywords

Arab spring · Islamization of the digital · Digitalization of Islam · Virtual *umma* · Facebook fatwas · Personalization of fatwas

Introduction

This chapter provides an overview of the current research issues, major trends, and future challenges to Internet research in the Arab region. There is a striking lack of social science-based Internet research literature that has systematically examined the Internet's impacts on and implications for culture, politics, and religion. However, in the context of the Arab Spring, there is a burgeoning interest among social scientists to examine the role of social media in triggering political change.

The main orientations of the Internet research in the Arab region are divided between social sciences research and humanities-oriented Internet studies. Within Internet research, a qualitative cultural approach is still dominant, but an empirical and quantitative approach is lagging behind. Internet research is dominated by descriptive and analytical approaches. Popular topics include new social media and the Arab Spring, religious identity, and radical Islamism.

The source materials include secondary information from previous studies, existing statistics, and primary data drawn from interviews with key Internet scholars in the Arab region. The interviews produce evidence not only about the facts of Internet research but also assessments of the face and future of Internet research. As a literature review, the value of this chapter is to provide a synthesis of a variety of sources. The paper's main research questions are as follows:

- What is the state of Internet research in general?
- What are the major themes in Internet research?
- Who are the key researchers on the research of the Internet?
- What has been the focus of the research efforts so far and what is the current status?
- Which areas have been identified as needing further research?
- What theoretical orientations and research methods are the most popular in Internet research?

Before proceeding with the analysis, it is worth noting that the Arab region is not a uniform political or social entity. However, many countries, cultures, and nations within this geographical region share cultural and religious patterns that make it a useful unit for analysis when it comes to examining the consequences of digital media. Significantly, the region is dominated by authoritarian regimes and is engulfed in religious (Islamic) traditionalism, conservatism, and extremism. In this

regard, it seems appropriate to speak of the Arab region as a religiously and culturally closed society. To navigate these similarities and differences, this study refers to the Arab region generally and at other times to specific national and subcultural situations.

The first section provides the context of the Internet landscape. The second section offers academic, consultancy, and market-oriented research projects with a practical and empirical focus. The third section is devoted to the digitalization of Islam, and the last section presents the future trends and tendencies on Internet research in the Arab world.

Perspectives on the Internet as an Object of Study

In the early 1990s, Arab countries lagged behind most of the world in adopting the Internet. The first Arab country that adopted the Internet was Tunisia in 1991. In 1992, Kuwait became the second country; while both Egypt and the United Arab Emirates soon followed in 1993. In 1994, Morocco, Jordan, Algeria, and Lebanon established their Internet connections (Allagui 2017). Saudi Arabia and Iraq were the last Arab countries to provide public Internet access, in 1999 and 2000, respectively (Allagui 2017).

Driven by the economic modernization process, Arab regimes adopted the Internet but with an intention to censor and control it. With the lack or even the absolute absence of democratic values and structures, the Arab political regimes responded with fear to the technologies of freedom. The Internet was framed as a technology associated with free thinking and open societies that challenge the conservative and religious thinking frame of the majority of Arab countries and cultures (Anderson 1999; Ibahrine 2007; Abdulla 2007).

Some authors have explored the digital divide that has characterized the Arab world. For instance, in one of the first books on the Internet in the Arab region, Rasha Abdulla correlates the digital divide to the socioeconomic development of the region, with some notable exceptions such as the United Arab Emirates, Kuwait, and Bahrain (Abdulla 2007). One of the serious problems that Internet research has faced was the lack of data that allows for the definition and treatment of research questions, problems, and issues. The average Arab citizen cannot afford to access the Internet on a daily basis. There are some reasons for this. One is that the Internet is too expensive for low-income earners. The second reason is that much of the Internet in Arab countries is under strict types of censorship and surveillance. Some Arab countries monitor and filter, and even ban or block certain websites with inappropriate content that were considered harmful to the religious and moral stability of society. Filtering and banning of certain sites deemed inappropriate for moral or political reasons still occurs (Hofheinz 2005). After 20 years, some Arab regimes have become proficient at containing the technologies of freedom – if not exploiting them for their own purposes.

Despite the advent of the Internet in the early 1990s, academics, policy makers, and marketing research companies have started to produce research examining the

role of digital technologies in transforming Arab societies and cultures. In 2010, the Open Society media program initiated a research project which maps digital media in Egypt, Jordan, Lebanon, and Morocco. The mapping project examines and assesses the impact of how digital technologies affect the media systems in the respective countries. It has become easy to access digital content and news, yet in some places in the Arab region, the lack of affordability and access still represent an impediment to universal access.

The Arab Media Outlook is considered the most comprehensive source of data on the media sector in the Arab world. In 2016, the fifth edition of “Arab Media Outlook: Youth, Content, and Digital Media” examined the main thrust of the Arab youth and digital consumption of media content, alongside exploring the potential for future growth of the Internet and its impact on media. Along with the rapid development of the Internet during the last several years, many social scientists have begun to make this new medium the subject of their studies.

Islam and Internet Research

The roots of the systematic study of the Internet phenomena and Islam can be found in the early 1990s, for example, in Anders's (1993) work on virtual communities, Bunt's (1995) work on identity in cyberspace, and Ibahrine's (2007) work on the soft Islamization of the public sphere in Muslim societies. In the early 1990s, scanned translations of the *Quran* and *Hadith* were uploaded on websites created and run by Muslim students and professionals in North America, Europe, and Japan (Anderson 1999). By digitalizing Islamic content, they paved the way for widespread access and later use. These early adopters suggested that a new class of “interpreters of Islam” has emerged due to the information and communication technologies (Anderson 1999; Ibahrine 2007).

The Internet gained momentum in the Arab world in 2000, when some Islamic leaders and preachers posted their religious information material on their websites (Bunt 2000; Ibahrine 2007). The publication of religious materials would have been unthinkable in the early 1990s when the communication sphere was blocked against Islamic preachers. In the first generation of the Internet, there were some traditional websites like Qaradawi.net and *IslamOnline* that acted as one-stop shops for religious information and comprehensive services to Islamic communities, including *fatwas*. Bettina Gräf focuses on the impact of electronic media on the process of issuing *fatwas* (media *fatwas*) that have become a key means of legitimizing Muslim politics (Gräf 2008). Websites such as “ask the imam” provided believers with compact information in response to specific questions. Believers sought religious guidance and orientation through questions and answers that are available online. Some Muslims showed their religious affiliation by browsing specific websites. These new types of websites highlighted the conflict between established sources of traditional religious knowledge and new sources.

In the early 2000s, Gary Bunt examined how religious authority has been executed and how religious communities (*ummah*) have been formed in virtual

environments. Recent research has suggested that the nature of religious authority might be altered (Bunt 2000). As Bunt argued, millions of Muslims rely on the Internet, including websites and emails. The argument that the Internet has a profound effect on Islamic culture in today's Arab and Islamic worlds is that it is not only the educated minority that is behind the emergence and dynamization of the public sphere. Abdul Rahman et al found that religiosity affects Muslim surfers' levels of religious activities online (Shirley et al. 2008: 108). Religiosity is a positive factor when it comes to digital religious activities. Other scholars argue that the digitalization of Islam represents a challenge to the conventional understanding of Muslim identity (Ibahrine 2014).

Some scholars established the rise of the neo-Islamism with the arrival of the Internet (Ibahrine 2007). Ibahrine argues that new electronic media helped Islamists to soften their religious and political discourses in some Islamic countries like Morocco. One of the best examples is Morocco's Party of Justice and Development (PJD). In 2011, the Islamist party came to power and formed a government of a coalition with secular parties, including a socialist party. The Internet has made it possible for Islamists to revise their basic concepts about pluralism, democracy, and personal freedom. Their debate with other actors has pushed Islamists to reconsider their understandings of the place of political Islamism in modern societies (Ibahrine 2013). Moroccan Islamists have gained more ground in many Moroccan segments because they are capitalizing on their high-tech "savviness" and their emotionally affective appeals. They have accumulated a huge capital of social relations and thanks to the rise of "mass self-communication," they are enhancing their virtual as well as real networking power.

Long before the popularity of social media among young Arabs, some jihadists and extremist organizations used the Internet to circulate video clips on online forums to recruit terrorists (Bunt 2003). Islamist extremists have issued many *fatwas* against digital technology, including social media because they could potentially harm Islamic values and traditions. For them, these digital devices could lead to flirting, and the use of Quranic verses as ringtones can be considered disrespectful. However, they have also embraced the Internet. In these digital environments, there are also Blogistan, where jihad-oriented networks use the Internet to position and spread their rigid and strict linear understanding of the sacred text. Unlike Annabelle Sreberny and Gholam Khiabany who used the term Blogistan to examine the liberating effects of blogging in Iran where bloggers have contributed to the development of a new public space for debate (Sreberny and Khiabany 2010), my use of the term Blogistan here is to refer to the colonialization of Internet spaces by violent and terrorist groups who used the technology to indoctrinate, resource funding, recruit like-minded individuals, and hyperlink with terrorist networks (Weimann 2006).

Some scholars suggest that the advent of digital media in the Arab and Islamic world is in the service of religious leaders to advance their monolithic, strict, and orthodox interpretations (Šisler 2006). Others argue that these accounts sound rather unconvincing and simplistic since digital media would have a very limited effect on culture in the Arab and Islamic world (El-Nawawy and Khamis 2009). The

fundamental issue remains the impact of the Internet on how modern Muslims perceive Islam and how Islam is changing in the context of the twenty-first century.

Many scholars argue that there is a blurring of the lines between the sacred and the profane spheres on digital platforms. These new bold interpretations are challenging traditional and rigid religious interpretations that have been framed by authority, conformity to and compliance with the established order and schemes (Eickelman and Anderson 2002).

El-Nawawy and Khamis's conclusions are somewhat pessimistic: online deliberations facilitate neither "rational-critical discourse" along the lines of a Habermasian public sphere, nor *shura* (consultation), *ijtihad* (independent interpretation), and *ijma'* (consensus) in the Islamic tradition of intellectual debate (El-Nawawy and Khamis 2009). They analyze the conversations in the discussion forums of three of the most visited Islamic websites such as www.islamonline.net, www.islamway.com, and www.amrkhaled.net. The authors use a content analysis method to investigate the extent to which these websites have provided a venue for Muslims to freely engage in discussion among themselves and with non-Muslims about politics and religion (El-Nawawy and Khamis 2009). El-Nawawy and Khamis used a textual analysis of threads on the discussion boards of three major Islamic websites and provide a critical perspective on the Habermasian notion of the "public sphere" (El-Nawawy and Khamis 2009).

For the first time, ordinary Muslims can easily access holy texts without any scholars' mediations; they do not need to rely on preachers. Digital platforms have provided young, educated Muslims with a new independent and critical mindset. They started criticizing the religious establishment and started embarking on new interpretations. They started to experience religious journeys from devout Muslims to atheists and then to a mystical version of Islam (Sufism). Some extremist religious authorities have called for a ban on the entire Internet, while others argue for a soft ban on certain sites. The ulama, scholars of religion, have special relations with communication technology. They originally denounced and objected to television in the 1960s, satellite in the 1990s, and the Internet in the 2000s, but later adopted these technologies and became active users (Al-Rasheed 2007: 56).

The most authoritative Islamic voice on the Internet is the Quran. There are some translations in Arabic, Farsi, Urdu, Malay, and Bengali. There is an emergence of specific forms of virtual Islam. Along the way, Bunt's research focuses mostly on the many forms of digital Islam in all its facets. He examined traditional websites, blogs, and social media platforms such as social-networking sites. The Internet is a technology that has greatly transformed how Muslims connect, interpret, and live their religion at an individual and collective level. He coined the term "iMuslims," stylized in the same vein as the ubiquitous Apple products. It is also about the strong impact of the Internet on Muslims. It underscores the interplay between modern technology and old religion. It can also underscore the individual expression of the new Islamic practice by millennials who are tech savvy and open to Facebook-Fatwa. These are a reflection of personalized types of fatwas. Bunt's main findings suggest that it is appropriate to examine the Islamic blogosphere in the plural since

there is an explosion of networks of interconnected blogospheres organized primarily along the lines of nationality and citizenship.

Bunt argues that the “i” in iMuslims represents the Internet which helps reframe information, knowledge, and interpretations of Islam. It also opens new pathways of interactivity among Muslims. The “i” is also about the new connections and affinities that go far beyond old boundaries and identities. One of the strongest arguments is that the Internet will revive the collaborative tradition of producing knowledge of Islam. The Internet has lifted the limitations and restrictions over the collaborative scholarship because of tech savvy users (Bunt 2009).

Scholars have exclusively paid more attention to how the Internet has transformed political situations. Rarely is analysis dedicated to how the Internet transforms users’ personal convictions, going as deep as one’s spiritual and religious core. For Bunt, the Internet is just an extension of the traditional and conventional habits of receiving and sending religious knowledge. Believers used to seek religious guidance through questions and answers and these services have migrated to digital platforms. Websites have become the source of religious affiliation in the same way as a mosque or religious sect.

Just as other regions, the Muslim majority countries have witnessed a rapid diffusion and adoption of social media platforms such as Facebook, Twitter, and YouTube in recent times. In the Arab world, Facebook is still the leading social networking website with around 156 million users in the Arab World, Twitter follows with 11 million active users. The Arab region is second to the USA when it comes to the number of YouTube daily views. With 90 million video views per day, Saudi Arabia has the world’s highest number of YouTube views per Internet (We Are Social 2017).

The popularity of social media platforms in the Arab world has led some scholars to expect that their impact on religious life will rise. The common argument is that social media has the potential to change people’s religiosity and practices of piety. The impact of social media on religious behaviors of individuals and communities in environments characterized by conservatism and traditionalism, it is argued, will be more profound than in environments characterized by liberalism and openness.

Like for the followers of other book-based religions in the Abrahamic tradition, communicating and winning the hearts and minds of believers and nonbelievers through *Dawa* is a central commitment for many Muslim and Islamic leaders. Social media has become an invaluable means to pursue the path of *Dawa* and the dissemination of the Quran. Only very few voices condemn the use of the new digital media as incompatible with Islamic practices. For instance, Abdul Aziz Al Shaikh, Grand Mufti in Saudi Arabia, advances a critical stance toward social media platforms such as Facebook and Twitter because, as he says, they disseminate lies and may destroy established relationships and Muslim families in the offline, real world. In a similar line, religious authorities in some Islamic countries issued *fatwas* against the use of social media like Twitter, arguing for its incompatibility with *Sharia* because it trades accusations and promotes lies (Ibahrine 2014).

While some of the Islamic religious leaders advise their followers *not* to use social media platforms, the overwhelming majority of scholars and preachers capitalize on

the effectiveness and efficiency of social media in engaging with the community of believers and enhancing their fidelity and loyalty.

In the first generation of the Internet, there were some traditional websites like Online Islam that acted as a one-stop shop to religious information and comprehensive services to the Islamic *Ummah*. These digital platforms led to the emergence of what some call Facebook Fatwas. *F-Fatwas* introduced a new paradigm to the practice of religious instructions in the way they were formulated, issued, disseminated, received, and acted upon.

The mushrooming of digital platforms during the second era of the Internet led to a process of undermining the monopolistic nature of religious orthodoxies. For many, social media has become an ideal platform, the new mosque or *madrasa*, for the dissemination of the Islamic belief. *F-Fatwas* spark commentary and feedback among many actors, including religious authorities, Islamist intellectuals, as well as young urban or secularized Muslims and ordinary believers.

One type of Islamic use of social media platforms is proselytization, which is widely popular among Islamic preachers. Some estimates put the numbers of Twitter followers for some Islamic scholars at 600,000. Famous preachers like Tareq Al Suwaidan and Amr Khaled even reach the magic number of one million when it comes to Facebook fans and likes. Ironically enough, some religious scholars have social media accounts even though they may have died decades ago. Their religious and intellectual followers aspire to reach new generations of digital natives and followers by creating Facebook pages and Twitter streams and YouTube channels. Social media is an increasingly important source of religious information for many people in the Muslim world. As a result, a new media culture is emerging, which has a significant impact on areas of global Muslim consciousness.

The use of social media is not limited to religious leaders; normal Muslims who started tweeting *Quranic* verses and *Ahadith* (the sayings and activities of the Prophet) also use social media. The dissemination of religious content regularly reaches its peak during Ramadan when the degree of religiosity increases. The “Ramadan Aperture,” when Muslims are internally and externally motivated to receive and process religious content in the form of “tweets,” is a new phenomenon that changes the way of Islamic faith is promoted among believers and nonbelievers.

The very nature of a tweet and its 280 characters, designed especially for ease of use and memorability, is a perfect tool for memorizing the Quran and the Prophet’s sayings. Tweeting *Quranic* verses and sayings from the Prophet have become a part of the religious rituals and habits of Ramadan. On the occasion of *Haj*, the pilgrimage to Mecca, some pilgrims tweet feeds offering a sense of virtual spirituality to their families; like a vignette for the sacredness and presence of the holy city. Other pilgrims upload photos and clips from sacred places to share the rituals and spiritual experience. These practices contribute to the enhancement of the co-religiousness and the co-piety of the Islamic *Ummah*.

All these practices indicate that social media is integrated into the habit of spreading the word of *Allah* and safeguarding Islam against critics from outside. For example, Muslims created Facebook pages to defend the prophet Mohammed from attacks. The website *Social Media and Islam*, for example, is a page that

“promotes the message of Islam on Social Media.” Social media also created an Islamic popular diplomacy. This involves the global mobilization of believers through virtual platforms in case of individual or group attacks on the prophet or the *Quran*. Prominent examples are the plan of a US-American pastor to burn copies of the *Quran* in 2010 and the anti-Islam video clip ‘Innocence of Muslims.’ These videos have triggered a global mobilization of protests against Muslims using social media platforms. Countries such as Pakistan, Jordan, and Egypt asked YouTube to delete the film from their platforms.

Some conservative leaders called for the creation and launch of *Sharia*-compliant *halal* social media platforms. As a response to these calls, some digital initiatives and projects were carried out. Islam-centered alternatives to Facebook such as MuslimSocial.com, Muxlim.com, and SalamWorld started to appear; yet their adoption rate is still very low (Pak 2012). The recent SalamWorld has sought endorsements from Saudi and Salafi scholars. This social networking website filters what it views as harmful content like pornography, terrorist activities, or human rights violations. Its mission is the respect of the values of Islam.

Social media has opened up the opportunity, especially for young Muslims, to engage with their faith and their co-believers in a manner that their parents could never have imagined. Where once the *Ummah* was a spiritual notion, with Muslim communities separated by language and geography, social media has broken down barriers and enabled young Muslims to connect irrespective of where they are. It allows them to discuss what it means to be a Muslim in the twenty-first century. Teenagers and young adults of second- and third-generation Muslims living in Western Europe and North America have become engaged in digital discussions and debates concerning religious issues and identities (Sisler 2011). Recent research has shown that young Muslims in Western societies are more receptive to religious beliefs and values (Sisler 2011). The Internet has made it possible for Muslim minorities to connect with local Islamic institutions and authorities. They can interact with Muslim communities and form their normative understanding and thus shape their religious manifestations and practices (Sisler 2011). Digitalization of Islam has helped Muslims in the diaspora to reconstruct their identities and negotiate their understandings of Islam as a system of values and ethics that emphasizes the significance of the individual and reduces the role of the collectivist culture (Sisler 2011).

For some hyper-digital activists, social media provides the means for re-uniting the *Ummah* in the form of an *e-ummah*. These activists believe that digital social platforms can contribute to the creation of virtual communities that may pave the way for eventual physical communities. Social media, they hold, can support the global cohesion of believers by weaving links between community members of the different countries worldwide. In some urban centers in North America and Western Europe, Islamic social media websites have contributed to the spread of Islamic symbols, rituals, and heroes among the members of the Muslim diaspora.

In the Islamic communities in the Northern Hemisphere, Islamic proselytizing efforts have been exceptionally successful. In Europe and the United States, non-Muslims accept invitations to convert to Islam. The personal videos of

converters are broadcast on YouTube and discussed in virtual chat rooms. Young Muslims have uploaded a great number of videos that discuss issues related to the creation of the universe. For instance, there are about 70,000 YouTube videos on the so-called “Scientific Miracles of the Quran,” an indication of their popularity.

Like Mysticism, *Sufism* is a way of inner and mystical practices of Islam. The ritual-mystical practice is based on a master-disciple relationship. Adherents of *Sufism* are traditional and not interested in technology because spirituality is about silence and stillness while digital social networking platforms are agile and restless. However, in recent times, even *Sufist* movements have made use of social media to practice their spiritual purification in the virtual world. It is remarkable that the use of social media has led to an extension of the *Sufi* spiritual sphere of influence and followers. The challenge for these *Sufi* groups is to adequately address the need for a direct and physical relationship with the spiritual master, *Sheikh*, which is still a key moment of the *Sufi* experience.

In addition to the Sufi and other tolerant versions of Islam, there are also violent manifestations of Islam to be found in the blogosphere, enacted as *Al-Qaida*, *Hamas*, and *Hizballah*. The emergence of e-jihad in forms of digital activism, hacking activities, and cyber-attacks has turned the blogosphere as a realm of civic use of social media into *Blogistan* where aggressiveness and violence are prominent.

The strongest manifestations of the use of social media for political or even militant Islamic movements are the recent Arab revolutions. The Arab Spring has brought Islamist movements and Islamist political parties to power in many Islamic countries. They were denied access to the public sphere, a reason why they turned to digital platforms as an efficient tool for creating and distributing political messages to bespoke audiences, and for mobilizing followers and supporters for demonstrations. For instance, during the mobilization of mobs on the Egyptian streets, the social media savvy used Facebook to schedule the protests, Twitter to coordinate, and YouTube to tell the world.

The recent return and rise of Islam is spectacular. It has been argued that the synergy of small media and social media has helped Islam to gain or regain a place in our contemporary complex social life. The continuous digitization of Islam and the Islamization of the digital represent a challenge to the religion of Islam in the twenty-first century, where closed systems are resisting the openness and the transparency of Wikileaks’ effects.

For centuries, interpretations of the *Quran* were reserved for a tiny minority of *Ulama*, the scholars of religion. Social networking websites, microblogging platforms, and mobile social apps have become avenues for disseminating sacred interpretations. Religious authorities on digital platforms are in the process of being undermined. The blossoming of digital *Fatwas* is an indication of the splintering of orthodoxies and the emergence of heresies. The traditional concept of religious authority has come under attack in many forms. Consequently, religious authority has become a contested domain, rather than an accepted reality by the uneducated masses. Social media may fade out, yet the process of digitalization of Islam or the Islamization of the digital is here to stay.

Bunt is a pioneer in this area research that studies Islam on digital platforms. His work systematically analyzes the impact of the Internet on Islam and Muslim communities. He examines various manifestations of Islam in the digital age. Many digital companies started catering special apps to meet religious needs. Muslims need apps that show mosques, Kiblas, and halal stores and supermarkets that are close to a user's location. There are even apps that show believers how to pray, like Salah 3D. Koran recitation apps that include text and audio versions of the Koran not only in Arabic but other languages are mushrooming. The number of downloads testifies to the popularity of these apps; it has been downloaded more than three million times.

This shows how digital Islam is fundamentally about Muslims using digital technologies to live out the spiritual and the ritual. In the literature, the overarching argument is that in the digital age, people adopt these digital technologies to "understand and practice their religion" (Šisler 2009). Digital technologies empowered Muslims to practice their religious rituals. They visit online shrines, take virtual pilgrimages, and incorporate social media into their spiritual routines. Some scholars have turned their analytical attention to the study of Islam and video games (Šisler 2008; Ibahrine 2016). These works examine the representations of Islam in video games and how Islam is represented in mainstream video games, such as *Age of Empires II* and *Quraish*. The aim of these studies is to explore how cultures influence game production because the game developers have "pre-defined formulas for expressing their ideas while simultaneously limiting the scope of such expression with schematized patterns" (Šisler 2010).

Other analysts and commentators have often focused on whether it is halal to play computer games because of the frivolity involved in being prohibited if such games contain blasphemy against God, religion, or exhibit a glorification of violence and images of a sexually inappropriate nature. Video games are a digital phenomenon that pervades much of Arab societies; irrespective of age, gender, or social status. Analytical attention has not been dedicated to how these digital platforms have transformed their users' convictions. Research can empirically analyze the manifestation of the gamification of cultures and religion.

Conclusion

In summary, the future of Internet research will be arguably controlled by change and control; change of technology and control of the political and religious powers. Disruptive digital technologies will challenge and change the future of Internet research in the region. However, political and religious control will make researchers think twice before embarking on research about politics and religion. The increasing popularity of social media studies will catalyze the development of usage studies in Internet studies. In the context of the Arab Spring, politics and the Internet have received the most extensive examination, which has developed into a unique theme in Internet studies. Some Internet researchers have observed that there is no discipline that does not study the effects of the Internet on the Arab Spring. For some

years, leaders in some Arab countries have said that ICTs would play a significant role in economic, political, and social developments in the region. After the Arab Spring, any optimist would disagree that there is some compelling evidence of the truth of this judgment, although the outcomes have frequently defied the hopes and dreams of planners. Internet research has come a long way over the past couple of decades. From a side interest pursued by political scientists and communication scholars from a diverse range of disciplines, following the Arab spring, Internet research has developed into a large field that continues to extend our understanding of the uses and impacts of the Internet on Arab culture and politics.

The most underdeveloped field in the past decade is mobile usage and religious activities studies, which are expected to become more prominent in the near future taking into account the adoption of mobile phones in the region. Indeed, there is an exponential growth of mobile phones and religious activities on mobile phones with ever more sophisticated features and functions. A recent survey by Ipsos, a market-research firm, found that some Gulf countries boast some of the world's highest rates of phone penetration, with the United Arab Emirates ahead at 61%. Even in low-income Muslim countries, adoption is respectable: 26% in Egypt (eMarketer 2015). More than a third of people in the Arab region now use the Internet, slightly above the world average (eMarketer 2015).

More research is thus needed that addresses mobiles and piety, religiosity and mobile usage. While digital technology is rapidly increasing, it is interesting to see the future of Internet research in a positive vein. First and foremost it is easy to conclude that Internet research is likely to thrive due to the sheer amount of data made possible by the diffusion and adoption of digital technologies. Furthermore, the Internet research areas reveal that the Internet impacts virtually every area of communication. Interestingly, Internet research will shift away from descriptive types of studies toward analytical research. The research will use the Internet to understand how and why users, citizens, and believers use the Internet. Internet researchers are called to take their methods and tools to the next level of analysis.

Understanding the relationship between Islam and digital platforms will increase our understanding of the larger cultural shifts at work within traditionally opaque societies. Twitter has made visible the seriousness of the contradictions and contractions of the religious discourse on the sacred text. The interpretation struggles have resulted in religious orthodox and authorities perceiving heteroxies as a threat and defining them as aberrant deviations from the right path. As a result, a new digital media culture is emerging, which has a significant impact on areas of consciousness, authority, and identity in Saudi Arabia.

Muslims have adopted digital technologies, and they use them in almost the same ways as everyone else: they use them for watching entrainment content, for e-commerce, and to look for information. But the adoption of technology has implied in many ways the Islamization of the technology. This is a radical change that has a deeper meaning for religion and society at large, but Internet research could not examine these new phenomena.

Social networking websites, microblogging platforms, and mobile social apps have become avenues for disseminating competing sacred interpretations. Twitter is

an increasingly important source of religious information for many Muslims. The blossoming of digital *fatwas* is an indication of the splintering of orthodoxies and the emergence of heresies. Religious authorities on digital platforms are in the process of being undermined. The traditional concept of religious authority has come under attack and has been shaken in many forms. Their authority is not questioned, yet it is challenged. The analysis shows how religious leaders “execute” their accumulated understanding of history and religious interpretations. They bring this traditional understanding into the Twitterverse field and transform it.

For centuries, interpretations of the *Quran* have kept a reserved domain for a tiny minority of *ulama*. Religious leaders dominate the Twitterverse because of their number of followers. The constituted hierarchy on Twitter is a result of the combination of religious and accumulated symbolic capital and the strong number of followers. The new types of Facebook *fatwas* are likely to shift the balance of power in shaping religious interpretation. Consequently, religious authority has become a contested domain, rather than an accepted reality, by the uneducated masses. Twitter permits individuals to change the dynamics of a collectivist society. Twitter may fade out, yet the process of digitalization of Islam or the Islamization of the digital is here to stay.

The common argument is that digital technologies have the potential to change people’s religiosity and practices of piety. The impact of digital technologies on religious behavior in environments characterized by conservatism and traditionalism will be more profound than in environments characterized by plurality and openness. Much of this analysis, however, has examined the role of the Internet in Arab countries where technological diffusion is common, the mass media are privatized, or semiprivatized and competitive, and assumptions of some limited personal liberty are taken for granted. Even with the tremendous amount of cultural overlap between these Arab countries, the Internet has had widely varying impacts, and citizens and consumers have employed these digital technologies to different uses.

References

- Abdulla R (2007) The internet in the Arab world: Egypt and beyond. Peter Lang, London
- Azimaton Abdul Rahman, Nor Hazlina Hashim & Hasrina Mustafa (2015) Muslims in cyberspace: exploring factors influencing online religious engagements in Malaysia, *Media Asia*, 42:1–2, 61–73
- Allagui I (2017) Internet in the middle east. An asymmetrical model of development. *Internet histories. Digital technology, culture and society* 1:97–105
- Al-Rasheed M (2007) Contesting the Saudi State: Islamic voices from a new generation. Cambridge: Cambridge University Press
- Anderson J (1999) New media in the Muslim world: the emerging public sphere. *ISIM Newsletter* 5:39–39
- Bunt G (2000) Virtually Islamic: computer-mediated communication and cyber Islamic environments. University of Wales Press, Cardiff
- Bunt G (2003) Islam in the digital age: E-Jihad, online fatwas and cyber Islamic environments. Pluto, London

- Bunt G (2009) iMuslims rewiring the house of Islam. University of North Carolina Press, Chapel Hill
- Eickelman D, Anderson J (2002) The internet and Islam's new interpreters. In: Anderson J (ed) New Media in the Muslim World: the emerging public sphere, 1st edn. Indiana University Press, Bloomington, pp 45–66
- El-Nawawy M, Khamis S (2009) Islam dot com. Palgrave Macmillan, New York
- Ibahrine M (2016) In: The dynamics of the Saudi Twitterverse. Mellor N, Rinnawi K (eds) Political Islam and Global Media The boundaries of religious identity. Routledge, London
- Gräf B (2007) Sheikh Yūsuf al-Qaradāwī in cyberspace. Die Welt des Islams 47:403–421
- Hofheinz A (2005) The internet in the Arab world: playground for political liberalization. A Hofheinz international politics and society 3:78–96
- Ibahrine M (2007) New media and neo-Islamism: new Media's impact on the political culture in the Islamic world. AV Akademikerverlag, Saarbrücken
- Ibahrine M (2013) Social media and soft socio-political change in Morocco. In: Howard P, Hussain M (eds) State power and information infrastructure. Gower/Ashgate, Farnham
- Ibahrine M (2014) Islam and social media. In: Encyclopedia of social media and politics. SAGE, Thousand Oaks, pp 737–741
- Pak J (2012) Salamworld: Facebook's new rival?. In: BBC News. <http://www.bbc.com/news/technology-19440584>. Accessed 11 Sep 2017
- Šisler V (2006) Representation and self-representation: Arabs and Muslims in digital games V Šisler gaming realities: A challenge for digital culture. In: Fournos (ed) Athens
- Šisler V (2008) Digital Arabs: Representation in video games European. Journal of Cultural Studies 11:203–220
- Šisler V (2009) Video games, video clips, and Islam: new media and the communication of values. In: Pink J (ed.) Muslim societies in the age of mass consumption. Newcastle upon Tyne: Cambridge Scholars Publishing, pp. 231–258
- Šisler V (2010) The new Arab cyberscape redefining boundaries and reconstructing public spheres. Annals of the international communication association 34:277–315
- Šisler V (2011) Cyber counsellors: online fatwas, arbitration tribunals and the construction of Muslim identity in the UK. Information, Communication and Society 14:1136–1159
- Sreberny A, Khiabany G (2010) Blogistan: the internet and politics in Iran. IB Tauris, London
- Varisco D (2011) Climbing the virtual minbar of cyberspace. Review of Middle East Studies 45:182–191 <http://www.jstor.org/stable/41496361>
- Weimann G (2006) Terror on the internet: the new arena, the new challenges. United States Institute of Peace, Washington
- (2015) Smartphones, Tablets Spread Across the Middle East and Africa – eMarketer. In: Emarketer. com.<https://www.emarketer.com/Article/Smartphones-Tablets-Spread-Across-Middle-East-Africa/1012989>. Accessed 10 Sep 2017
- (2017) Digital in 2017: Global Overview. In: We Are Social. <https://wearesocial.com/special-reports/digital-in-2017-global-overview>. Accessed 13 Oct 2017



How to Compare Different Social Media: A Conceptual and Technical Framework

44

Jakob Linaa Jensen, Peter B. Vahlstrup, and Anja Bechmann

Contents

Introduction	800
The Outline	801
Existing Studies of Use Across Social Media Platforms	802
Theoretical Approach	803
Conceptual Approach	804
Methodological Approach	806
Technical Approach	808
Conclusion	811
References	813

Abstract

Social media research has gained traction during the last 10 years within Internet research and digital sociology. However, due to methodological and technical difficulties studies have mainly focused on analyzing only one platform per study (often Twitter or Facebook), especially when the study involves analysis of large public or private data streams (e.g., Bechmann. *J Media Bus Stud* 11(1):21–38, 2013; Bechmann. *Managing the interoperable self*. In: Bechmann A, Lomborg S. *The ubiquitous internet: user and industry perspectives*. Routledge, New York, pp 54–73, 2015; Boyd and Marwick. *Social privacy in networked publics: teens'*

J. L. Jensen (✉)

Danish School of Media and Journalism, Aarhus C, Denmark

e-mail: jlj@dmjx.dk

P. B. Vahlstrup

Information Studies, Aarhus University, Aarhus C, Denmark

e-mail: imvpbv@cc.au.dk

A. Bechmann

Aarhus Institute of Advanced Studies, Aarhus University, Aarhus C, Denmark

e-mail: anjabechmann@aias.au.dk

attitudes, practices, and strategies. In: Proceedings of a decade in internet time, 21–24 September 2011, University of Oxford, 2011; Fernandes et al. *Mass Commun Soc* 13(5):653–675, 2010; Marichal. First Monday, 12(2), 2013; Lotan et al. *Int J Commun* 5:1375–1405, 2011; Wu et al. Who says what to whom on Twitter. In: Proceedings of the international World Wide Web conference (WWW 2011), pp 705–714, 2011; Bruns and Burgess. *J Stud* 13:801–814, 2012). The fact that such data streams are accessed through different application programming interfaces (APIs) that have their own different logics means that complexity increases at a technical level.

However, this chapter argues that addressing such technical complexities also requires looking at issues at the sociological and conceptual level. How do different social media, for instance, Facebook, Twitter, and Instagram, fundamentally differ? By addressing not only the different social and relational logics but also linking them to processes of data retrieval and analysis, the chapter aims to contribute with new insights into the fundamental character of two seemingly related social media and address questions which need to be posed in order to make solid and comparative academic analyses in the future.

More specifically, we develop a framework for the analysis of use and relations across social media, combining a theoretical, a conceptual, a methodological, and a technical approach. We identify challenges and suggest a specific technical implementation that we in the end evaluate. Technically, we focus on Facebook, Instagram, and to a certain extent Twitter, but we argue that our framework can be easily expanded to encompass other social media. The main argument in the chapter is that bridging is not an easy task as several challenges occur on different levels that the researchers need to account for in greater details. First, in the technical infrastructure and/or database structure relations are simple but represent many different complex sociological relationships and interaction types. Second, the elements of social media as accounted for need to be translated socially. Third, when we study user-centric social media use, we increase complexity in at least two different dimensions, we propose a mixed method design and we propose a cross-service approach.

Keywords

Sociology · Social Network Analysis · Meta-Methodological · Multimethods

Introduction

Social media has become an important focus of research within the fields of humanities and social sciences during the last 10 years. This has raised important methodological questions. For instance, how do we study a complex and ever-changing phenomenon of social media? How do we study users, interactions, and overall patterns? And is it possible to compare social media to other, more well-known media formats, or make comparative analyses across various social media platforms?

The latter question is to be answered in this chapter. So far social media studies have mainly focused on analyzing only one platform per study (most often Twitter followed by Facebook). This has particularly been the case in quantitative studies involving analysis of large public or private data streams (e.g., Bechmann 2013, 2015; Boyd and Marwick 2011; Fernandes et al. 2010; Marichal 2013; Lotan et al. 2011; Wu et al. 2011; Bruns and Burgess 2012). Good reasons for this rather limited approach are methodological and technical difficulties. For instance, the fact that such data streams are accessed through different application programming interfaces (APIs) that have their own different logics means that complexity increases at a technical level. Further, data from the APIs might have different formats and carry different implicit meanings, making direct statistical comparisons difficult or impossible.

However, this chapter argues that addressing such technical and statistical complexities also requires looking at issues at the conceptual and social level. How do different social media platforms, for instance, Facebook, Twitter, and Instagram, fundamentally differ? What are the main social and interactional logics across platforms, and how do different technical architectures affect user dynamics?

More specifically, in this chapter, a framework is established for the analysis of use and relations across social media, combining a theoretical, a conceptual, a methodological, and a technical approach. We identify challenges and suggest a specific technical implementation that we in the end evaluate. Specifically, we focus on Facebook, Instagram, and to a certain extent Twitter, but we argue that our framework can be easily expanded to encompass other social media.

By addressing not only the different social and relational logics but also linking them to processes of data retrieval and analysis, this chapter contributes with new insights into the fundamental character of two seemingly related social media platforms and provide guidelines and inspiration for those who wish to do their own comparative analyses of social media platforms.

The Outline

The chapter starts by discussing conceptual and methodological frameworks in existing studies on social media. Then follows a theoretical approach to studying content and interactions across social media platforms, based on a symbolic interactionist inspired approach claiming that social interaction is the key element of social relations and social life in general. Next, the theoretical frame is turned into a conceptualization of key features of various social media. Then follows a proposed methodological approach based on such conceptual definitions. Finally, a technical approach is shown and discussed, encompassing the three other approaches. The conclusion has a reflection on the challenges translating social concepts into technical solutions and vice versa and directions for future developments are sketched.

Existing Studies of Use Across Social Media Platforms

In this chapter, social media platforms and social network services will be used as synonyms. Boyd and Ellison (2007) in their original definition described what they call social network sites as

web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections. . . .

Even though this is perhaps the most cited definition of social media services, it still fails to address the scope of this chapter – the nature of cross social media use. First and foremost, social network services are no longer entirely web-based as most contemporary use takes place through apps on mobile phones or tablets; therefore, we suggest to replace “sites” with services. Secondly, various services tend to remediate one another. Facebook’s initial focus on personal profiles and networking has been supplemented by content sharing, of images, videos, and news. In fact, Facebook has become a meta-medium, encompassing a multitude of content forms and media types (Jensen and Tække 2013). On the other hand, content sharing services like YouTube, Flickr, and Instagram have added personal profiling or networking properties to their initial layout. It becomes increasingly difficult to clearly distinguish social network services from other kinds of social media. Ellison and Boyd (2013) acknowledge such developments in their updated definition from 2013, highlighting the increasing role of content and the interaction between content sharing and personal relationships.

For some time, much empirical research on social media has focused on Twitter, due to the fact that hashtag streams have the status of public data and are thus easier to retrieve and analyze without informed user consent. Further, Twitter has allowed for extensive analyses through technologies like TwapperKeeper and DMI-TCAT but has recently limited such possibilities. Facebook, on the other hand, has had a more closed approach towards data retrieval as less data streams are public and therefore require informed user consent in order to retrieve (Bechmann and Vahlstrup 2015).

As already stated, the majority of academic studies have mainly focused on analyzing one platform or social network service per study (e.g., Boyd and Marwick 2011; Bechmann 2015). One reason is that data from different social media are located within different APIs, creating technical complexity. A study of a Norwegian election (Enli and Skogerø 2013) is one among many examples of studies of time-limited phenomena from a cross-platform perspective, but the focus is not on the methodological challenges in cross-platform analysis. Other examples are Taneja et al. (2012) who studies use across media platforms. However, they rely on observation studies in user-defined repertoires and thus focus on media consumption without an interest in the actual data, social relations, and content use. Hanna et al. (2011) establish a framework for understanding the ecosystem and interplay of various social media but fail to propose more detailed analytical measures.

More relevant in our context, Becker et al. (2012) establish a framework for retrieving event-related social media content across social media YouTube, Flickr, and Twitter but do not include Facebook or Instagram in their approach. Courtois and Merchant (2013) are among the first to describe and use APIs as tools for data retrieval and analysis within social research. Their approach is based on YouTube and does not cross digital platforms.

Most studies have taken either a purely conceptual or a purely technical approach and few have presented truly integrated approaches across social media. The present chapter might include features from previous research, but it is an attempt to establish a mixed method framework for studying interactions across social media platforms, combining a sociological understanding of concepts with specific discussions of data retrieval, analysis, and adherent technical issues.

Theoretical Approach

There has been a diversity of sociological perspectives applied to the analysis of computer-mediated communication. In the early years, a common approach was the postmodern, focusing on the fluent identity online and the possibility of a break with existing social and physical relations (Turkle 1995). However, much of this literature focused on the identity construction and personal performance rather than social relations. Such ideas have also guided some expectations on behalf of social media (see for instance Fraser and Dutta 2010). In general, utopian ideas of a radical new social reality with no borders, races, or social divisions proved to be unrealistic. For instance, specific analyses of social network services have demonstrated how most people prefer to interact with whom they already know (Jensen and Scott Sørensen 2013).

Recognizing the importance of identity, we claim that relations are the core phenomena of social life as they are not only the constituting feature of sociality but also define identity. No human is an island but exists in relation to other humans (Burkitt 2008). We draw on the classic sociological approach of symbolic interactionism (Blumer 1980) and claim that self-presentation and identity construction is primarily maintained through interactions with other users (Gergen 2009).

Another related framework that has been widely used to analyze computer-mediated communication is actor-network theory (ANT). However, ANT studies (see, for instance, Latour 2011; Law 1991) focus on the negotiations/translations happening among actors (humans as well as technology) often with a developmental perspective, not on the human social relations as such. Similar focus is found in social construction of technology (SCOT) perspective that has been fruitful in studies of uses and construction of technologies but not with a main focus on social relations either. Still, these theoretical fields as well as cyborg theories (Haraway 1991 and Clark 2011) share an understanding of technology as integrated with the human being per se that is important to our framework. Integration between human and technology is the premise for cross-social media studies, albeit the focus in our perspective is on the social relations and communication. When claiming that we do

not need to focus on the different platforms, but on the social relations across platforms and services, we move our focus away from an anticipation of the platforms' primary meaning as standalone and exterior technology. Instead, it is assumed that people focus more on what they do on the platforms rather than where they do it – be it online, offline, on specific platforms, or across media formats.

Thus, measuring identity and social relations, one should focus on the interactions among users. Following such a position, what presently characterizes social media like Facebook, Twitter, and Instagram is that even though identity might still be constructed through self-presentation and performance, for instance, by the often delicately elaborated personal profiles, the main social feature is the interactions among users. A coherent analytical framework must focus on relations, which take place through interactions, like friending, connecting, replying, retweeting, and sharing.

Conceptual Approach

First, the focus here is on *users' latent* communication. Here, the point of departure is taken in Berelson's (1952) distinction between manifest and latent communication. As one cannot grasp latent meanings of communication directly but must rely on manifest communication and then interpret the latent meanings, the conceptual approach has to be based on manifest communication. Only visible communication acts are grasped here, as the approach is data driven by nature.

Second, the present concept is user-centric approach rather than media-centric approach. The users and their interactions across media are in focus, rather than the medium itself. What is interesting is exactly to what extent usage resembles and differs across social media platforms. By focusing on users and not least their interactions and relationships with other users, we are able to track and follow interactions across media and platforms rather than, as many existing studies, focusing on content only within one platform.

Third, by analyzing across social media, even though one might be not able to access the total social context facing users, an understanding of the media ecology might be established (Gencarelli 2006).

Now, how can such theoretical understandings of relations and sociality be applied through specific concepts in studies across social media platforms?

For instance, relations differ on Facebook and Twitter. Whereas Facebook was originally dedicated to persons and networking, Twitter was basically a kind of microblogging service with limited possibilities of personal profiling. Thus, the different technical (and social) architectures create different user environments and probably also different patterns of actions.

Some more specific examples: the typical features of Facebook are the status update, the friend, and the "like." The typical features of Instagram are the image and the heart. The typical features of Twitter are the tweet, the hashtag, and the follower. Now the question is not only whether these features are comparable as such. We also face the challenge that Facebook, for instance, has imported the hashtag, but that it is

used differently and more sparsely than on Twitter. On the other hand, the Twitter feature to make a tweet a “favorite” is used differently by early tweeters than by latecomers. Earlier, the “favorite” was used as a tool for later retrieval or reading where it is now typically used equivalent to a Facebook “like.” Even though features are technically comparable across social network services, their meaning might differ. The major challenges might be conceptual first, technical later.

The challenge in establishing general concepts for studying social media use is to measure the socially relevant features, acknowledging the differences in sociality and technical architecture on the various services. Despite Facebook and Twitter copying one another (Facebook has, for instance, copied the hashtag, and Twitter has installed a “like function” to replace their “favorite function”), they still remain fundamentally different, in architecture and in social affordances.

Kietzmann et al. (2011) identify seven building blocks of social media: identity, conversations, sharing, presence, relationships, reputation, and groups. However, identity, presence, and reputation are abstract phenomena, which are hard to study directly and must be investigated through more specific (and observable) measures. Such latent phenomena must be studied through manifest interactions. For social network services, there are several basic elements of interactions. Central are of course the persons (profiles) who relate to other persons through content (updates, posts, likes, things shared, etc.). The point is that relations are content-driven, all relations are signified by some kind of content.

However, identity, presence, and reputation are abstract phenomena that are hard to study directly and must be investigated through more specific (and observable) measures. We believe that such latent phenomena must be studied through manifest interactions. For social media, there are several basic elements of interactions. Central are of course the persons (profiles) who relate to other persons through content (updates, posts, likes, things shared, etc.). The point is that relations are content-driven, all relations are signified by some kind of content.

Acknowledging the close interplay, for practical purposes, it is useful to distinguish between relations and content. In developing the analytical framework, there are at least six forms of interaction which run across the three social network services, albeit their specific meaning and social implications might differ considerably. The first three are: central content unit (CCU), acknowledgment, and hashtag address content, and the latter three are: dissemination, conceptual relation, and social relation address relations.

CCU is the core content feature of each service, which the interactions are centered around. For Twitter, it is the tweet; for Instagram, the media object (most often an image or a video); and for Facebook, it is the status update. By acknowledgment refers to a form of content expressing other relationship to or acknowledgement of the CCU. For Twitter, it is the favorite; for Instagram, the heart; and for Facebook, the like. Hashtag is included here as something in between. Where Twitter and Instagram are born with hashtagging, Facebook included it in 2013, creating the above-mentioned ambivalences.

Dissemination is basically about passing on content. By sharing on Facebook or retweeting on Twitter, one creates relations with fellow users who are presented for

the shared content. Sharing (or retweeting) is also about positioning one's identity in relation to the other. Interestingly, Instagram lacks this function at the time of writing. Finally, we distinguish between content and social relations. The former denotes the social aspect of content sharing; how specific content, for instance, shares and comments contribute to re(shape) relations between users. The social relation takes place as friendship or following. It must be observed that social relations differ: on Twitter and Instagram, they are asymmetric: one can follow non-followers. On Facebook, they are by default mutual/bidirectional: people need to recognize each other as friends. Again, Facebook is remediating other social media as they have now included followers as a supplement to friendships.

This catalogue of social elements aims to include central and relevant theoretical aspects but is not necessarily exhaustive. This framework is rooted in a broad sociological focus taking its point of departure in the symbolic interactionist tradition focused only on interactions and relations. Frameworks more specifically rooted in aesthetics or psychology might have a stronger focus on design, context, and in-depth analysis of user profiles and performances.

Methodological Approach

Moving from a media-centric to a user-centric study of social media usage by analyzing use across platforms does not only leave us with theoretical and conceptual challenges. It also provides us with methodological challenges and calls for practical decisions in the research design that have certain implications for the way we collect data. This section will discuss methodological decisions and challenges when we move from a media-centric to a user-centric perspective when analyzing usage across social media instead of usage on one platform.

In constructing a generic method for analyzing social media usage across platforms that will be implemented in a technical solution, we must return to central issues of how we implement our discussion on usage. What exactly are the different types of usage of social media that such a method might cover, and what are the associated challenges and choices connected to these?

When measuring usage, one should not only look at purely data traces as a representation of the social individual but also taking into consideration the context of the user and, for instance, the sense-making of and motivation for usage by the individuals communicating. Such definition strongly encourages a mixed method design in which both the various data traces and the sense-making and motivations can be collected.

As discussed earlier, a good approach is to interpret latent aspects of relations and social life based on the manifest data collected. When this distinction is applied in API-based research, it is wrong to assume that API data collection is purely a quantitative method in contrast to interview and observations as qualitative methods. Instead API data collection can both be used as an ethnographic (Anderson et al. 2009) methodological tool to explore deep and rich descriptions of usage and/or as a quantitative methodological tool to describe broad usage patterns on

a general population by collecting and analyzing public and private streams (see also Bechmann and Klausen 2015). Still, such methodological tools cannot stand alone and must be integrated with other approaches such as interviews, diaries, or observations in order to combine data traces with prompts on why such traces exist thereby contextualizing usage in a sense-making perspective (Bechmann and Vahlstrup 2015).

When studying usage across social media and not only data across social media, one might consider that not all communication is provided with hashtags, neither on Twitter nor Instagram, and especially not on Facebook. This leaves us not only with a mixed method design on the tool level (API data, interviews, observation) but also within the API setup choices. In order to collect the total usage, one must not only rely on public streams made available through hashtags but also the private streams of the users. The private streams allow us to study data and relations that users have not hashtagged and thereby made visible and accessible through hashtag analysis.

Such challenges call for a methodological construct in which both quantitative and qualitative scopes are possible and a collection of both public and private streams are made available. Still, capturing usages in a contextual way are still a challenge for all approaches including classical nondigital methods such as physical observation studies. In data-enriched mixed methods studies, this is not different. There are contextual markers such as GPS coordinates, time codes, platform information, frequency of communication, and social relations, but these markers only provide hints of the actual physical and social context. Diaries, prompts, or interviews can unfold the context, but again these are also flawed with delay challenges and interpretative elements if one operates with an understanding of capturing context in an “objective” matter. Studying use in context is an appealing ideal but not realistic with the present methodological toolbox. Nonetheless, a nonpositivistic perspective with more sources that point to usage will provide a more nuanced understanding of the usage in context.

The suggested framework is generic but takes into consideration that not only does the platforms contain sociological differences. In a user-centric perspective, they are also used for very different purposes. There are at least three aspects that can characterize differences in communication on social media: (a) timely differences, (b) spatial differences, and (c) relational differences.

Sociologically, social media are used for both planned events and spontaneous communication, for events that have a short time span and for communication that stretches over a period without a natural isolated frame (timely), for events and communication that are attached to a physical place and communication that are not (spatial), and for communication between defined social relations (within organizations, event participants, or among friends) or communication that have no pre-defined social relations except service dependent (the subscribers of a Facebook group or page, followers of Twitter, or Instagram hashtags).

Why is this important for the methodological construction of a generic framework? It is important, because if a generic tool is to be implemented technically, we also collect noise depending on the specific setting that we want to study. Collecting data for communication connected to a specific event through hashtag-streams

would, for instance, create a lot of noise in the analysis if the same hashtag has been used for other events or communication. Collecting communication for a research question without no natural time period would mean that the setup would need to be large enough technically to encompass the entire stream. Even though this is possible, there are large limitations in the APIs in terms of unlimited data access (Lomborg and Bechmann 2014) and also obvious research design issues apart from the technical limitations that need to be solved beforehand.

Last but not least, the methodological framework needs to account for ethical aspects of the extensive data collection and interpretation of the use. Computational social science studies might be approved and legal in accordance to national legislation, but this does not make it ethically solid. One of the main analytical challenges in cross usage social media studies is the identification of individuals across platforms in order to understand and analyze social relations and interaction that is the scope of this proposed framework. Such identification is obvious in qualitative studies, but in studies with a quantitative research interest, the analysis of cross-identity must be integrated in a technical bridging construct. The next section will account for a possible development of such a construct, but identifying users and relations across social media again has an ethical dimension. How can we inform the users of the implications of such data mining in the recruiting situation even though this is not the main purpose of the study? We propose an informed consent procedure in which such information is provided several times both on the initial contact email/website, on the social media platform retrieval, and on the bridging software. Also, it is important for the research design of such bridging software that participants are able to withdraw from the project at any given time (see also Bechmann and Vahlstrup 2015).

As the theoretical, conceptual, and methodological sections of the framework have accounted for, the social relations are more complex and multidimensional than the limited APIs and the social media database design in general. Despite classical methodological issues, computational social sciences will additionally loose even more complexity on the sociological level in terms of relations but gain complexity in terms of different data input sources as pointers towards usage.

Technical Approach

To be able to collect and analyze any data from the different social media platforms, one first needs to gain access to their APIs. Afterwards data have to be bridged allowing to identify the user across the different platforms and not just isolated on each platform individually. For instance, a user named John Thompson on Facebook may name himself Unicorn123 on Twitter and Tennisfan on Instagram. How do we know in fact that this is the same person and thereby analyze the actual social interaction patterns across services?

As we had already built a running software for collecting Facebook data, we expanded this to be able to collect Instagram data as well (see Bechmann and Vahlstrup 2015) and thereby making it possible to bridge Facebook and Instagram

users. Because of time and economical limitations, we have chosen not to include Twitter in this initial attempt of bridging the different platforms. To access Twitter data, there are already several tools available (e.g., “yourTwapperKeeper,” “TCAT – Twitter Capture and Analysis Toolset”), so even though they cannot integrate into the software, we would at least be able to collect the Twitter data related to a given case. At the time of implementation, there were no public available software tools for collecting Instagram data, so this seemed to be the obvious choice to implement as proof-of-concept.

The biggest challenge in bridging the data in the technical setup between Facebook and Instagram was to find a way in which we could make sure that we were actually dealing with data from the same user coming from multiple platforms. To be able to identify a user, a unique identifier is needed such as an ID, a username, or an email address (Gross and Churchill 2007).

The Facebook API exposes the user’s ID, username, and email address. The username is optional for the user and will be removed from v2.0 of the API and onwards. Furthermore, Facebook does not guarantee that the email-address will be present and if it is, it is possible for the user to choose a Facebook generated proxy email address instead of their actual email address. As of v2.0 of the Facebook API, user IDs are changed for each third-party application the user installs, so the same user will have multiple IDs, one for each application context. This is executed to protect the user against tracking across applications of different origin (“Graph API User,” “Facebook Platform Changelog”).

Instagram makes it possible to access the user’s ID and username but does not expose the user’s email address. The user ID would be an easy solution if we were to link user data coming from the same platform, but when the user data is delivered from two different platforms, it is very unlikely that the user should have been given the same ID, even by coincidence. The user’s email address is only present on Facebook and we don’t have any way of knowing if it is proxied or not, so we cannot use the email address either. Even if both platforms were to expose the user’s actual email address, there would still be problems by using the email address to link the data. Users often have multiple email addresses (Gross and Churchill 2007), so if different email addresses were used on Facebook and Instagram, we would not be able identify the user using the email address even if it was accessible. The username is not suitable either. First of all, only Instagram users are required to have a username where it is only a possibility on Facebook and again only accessible through the API until v2.0, but even if Facebook required the user to have a username, we would still face the same challenges as with the user’s email address. Users may use different usernames in different contexts (Liu et al. 2013) so using the username to bridge the platforms, if it was possible, would not be a very safe bet either.

Our solution to the problem was to use the software UserModel object to collect the different pieces of information from Facebook and Instagram in a unified signup flow and then if everything succeeds store the Instagram and Facebook user data in our database along with an association between the data.

In our software, all data related to a user of the system, logged in or not, is saved in a UserModel object which is stored in the user’s HTTP-session. As long as the

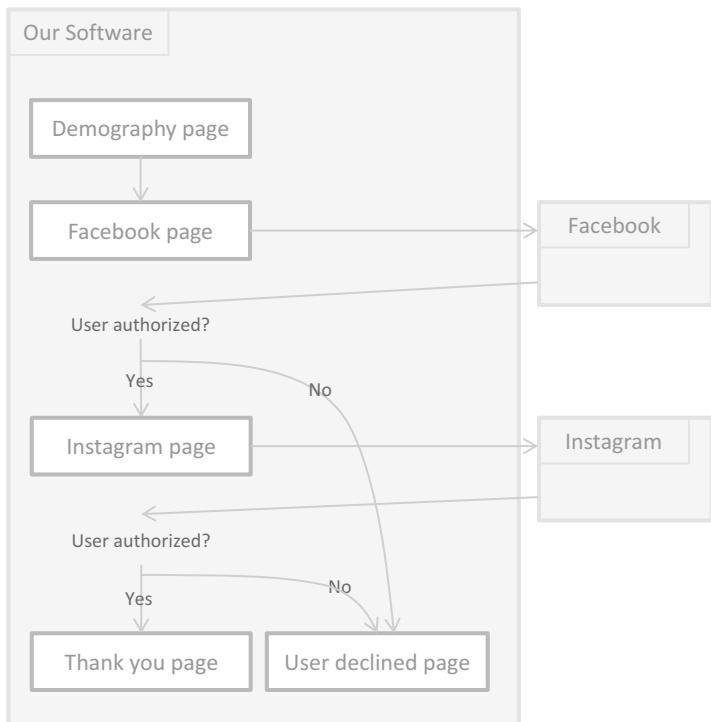


Fig. 1 Software participant signup flow

user has not been inactive for more than 30 min, cleared their cookie cache, or switched browsers, we can use the `UserModel` object to identify the user even though she is not logged in. Both Facebook and Instagram makes it possible to create a custom callback URL which the user will be returned to. When access to their account has been granted or denied, we can create a combined signup flow for both Facebook and Instagram as seen in the illustration below (Fig. 1).

After we receive each callback, we test if all the permissions have been granted and only if so, we move on to the next step. If the user in the middle of the process should deny access, no data will be saved about the user at all. During the signup flow, data is saved temporarily in a `ParticipantSignupInfo` object which is set on the `UserModel` object at the beginning of the signup flow. At the last step, when all permissions have been granted, we create a new `FbUser` object to hold the Facebook user data, an `IgUser` object to hold the Instagram data, and finally a `Participant` object that will bind the `FbUser`- and `IgUser` objects together thereby creating the link between the data from the two platforms (Fig. 2).

This solution has proven to work very well and has only few downsides that almost all can be prevented. First, the user session expires due to user inactivity for more than 30 min. This is handled by checking for the presence of the `ParticipantSignupInfo` object in the `UserModel`. If not present, this means that the user is trying

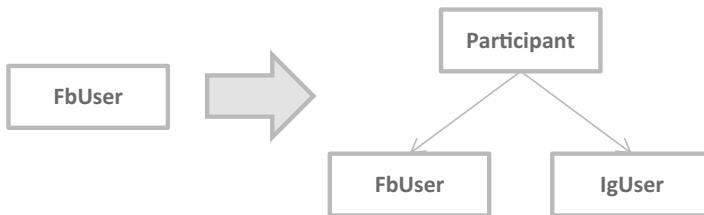


Fig. 2 From single to multiple social media platforms support

to access the signup flow in an unorderly fashion and the user is presented with an error page and asked to try again. Second, the user copies an URL from the signup flow to another browser. The solution is the same as above because the new browser will result in a new session context. Third, the user has already signed up once – we need to prevent the same user from signing up more than once so we don't get redundant data. Because we have access to the user's ID on both Facebook and Instagram, we can compare the ID from the user who is trying to sign up with the IDs we already have stored in our database. If we already have an FbUser object with the same Facebook ID or an IgUser with the same Instagram ID as the user trying to sign up, we can just skip to the end of the signup flow without saving anything new. As the same user can have several Facebook and Instagram accounts, we implement that a user is already signed up if just one of the Facebook or Instagram IDs are present.

The technical implementation of bridging Facebook and Instagram data in our software is made in such a way that it makes further expansion in relation to cross-service analyses easy, so the same user's profiles from other services such as Twitter, LinkedIn, and YouTube can be linked together with the Facebook and Instagram data. A loosening of the current restriction requiring all services being present and granted access to would probably be needed if more services are added, thus making it easier to recruit users to sign up even though they do not have an account on all the different social media included in the research project.

Conclusion

This chapter has proposed a methodological framework for the study of usage across social media in a user-centric rather than media-centric perspective that encompasses to bridge between sociological interpretations and technical attributes. In doing so, the chapter has discussed four aspects of such a framework: the theoretical, conceptual, methodological, and the technical approach. The framework contributes with suggestions on how researchers can move from a sociological research interest to a technical level and back to a sociological analysis through conceptual bridging. The framework further has contributed with a fully implemented sociological informed technical design that bridge the data collection and analysis of users on different social network services.

Table 1 Social elements of the three social network services

	Twitter	Instagram	Facebook
CCU	Tweet	Media object	Status update
Acknowledgment	Favorite	Heart	Like
Hashtag (#)	Yes	Yes	Yes (from 2013)
Dissemination	Retweet	—	Share
Conceptual relation	@mention, mention, reply	@mention, comment	Mention, wall post, comment
Social relation	Follower	Follower	Friend, follower

The main argument in the chapter is that bridging is not an easy task as several challenges occur on different levels that the researchers need to account for in greater details. First, in the technical infrastructure and/or database structure relations are simple but represent many different complex sociological relationships and interaction types. Second, the elements of social media as accounted for in Table 1 in this chapter (CCU, acknowledgment, hashtag, dissemination, conceptual and social relation) need to be translated socially. In other words, even though @mentions and comments might be two different things, computational social science needs to discuss if they are treated equally in the cross-service analysis and what the research implications of doing this are on the overall research interest in line with the discussions in this chapter. Third, when we study user-centric social media usage, we increase complexity in at least two different dimensions: we propose a mixed method design and we propose a cross-service approach. This means a large increase in different data points both from different services but also from both in-depth data methods (e.g., interviews, personal streams) and general knowledge methods (public streams). This again challenges the researcher in finding patterns in the datasets if analytical and visual overviews are not properly implemented in the bridging software solution as well. Future work lies in addressing more thoroughly how this increase in complexity challenges the cross-service researcher in greater details in the analytical phase on case studies. Further, the framework has accounted for sociological differences in studying different types of communication on timely, spatial, and relational parameters. Future work also implies to account for potential conceptual differences in different case studies on these three parameters. Last, but not least, future work needs to focus on how the analysis of different CCUs are supported by different and isolated scientific fields within deep learning and how a bridging on this level might take place. This is especially the case with the comparison of mainly textual content units on Twitter with visual content units on Instagram. Natural language processing algorithms and picture recognition algorithms are two different machine learning disciplines. Comparing these elements from a sociological perspective therefore requires an extensive discussion on the differences on algorithmic levels in order to reflect on the comparability of the outcome on a sociological informed analytical level. This chapter has suggested solutions and different challenges in doing sociological cross-service user studies but the perspective calls for even more future research.

References

- Anderson K, Nafus D, Rattenbury T, Aipperspach R (2009) Numbers have qualities too: experiences with ethno-mining. *Ethnogr Prax Ind Conf* 2009(1):123–140
- Bechmann A (2013) Non-informed consent cultures: privacy policies and app contracts on Facebook. *J Media Bus Stud* 11(1):21–38
- Bechmann A (2015) Managing the interoperable self. In: Bechmann A, Lomborg S (eds) *The ubiquitous internet: user and industry perspectives*. Routledge, New York, pp 54–73
- Bechmann A, Klausen HB (2015) Measuring impact across social media. *Rethink Impacts Rep* 2:1–34
- Bechmann A, Vahlstrup PB (2015) Studying Facebook and Instagram data: the Digital Footprints software. 20(12)
- Becker H, Iter D, Naaman M, Gravano L (2012) Identifying content for planned events across social media sites. In: Proceedings of the fifth ACM international conference on Web search and data mining, pp 533–542. ACM
- Berelson B (1952) Content analysis in communication research. Free Press, Glencoe
- Blumer H (1980) Mead and Blumer: the convergent methodological perspectives of social behaviorism and symbolic interactionism. *Am Sociol Rev* 45(3):409–419
- Boyd D, Ellison NB (2007) Social network sites: definition, history, and scholarship. *J Comput Mediat Commun* 13(1):210–230
- Boyd D, Marwick A (2011) Social privacy in networked publics: teens' attitudes, practices, and strategies. In: Proceedings of a decade in internet time, 21–24 September 2011, University of Oxford
- Bruns A, Burgess J (2012) Researching news discussion on Twitter: new methodologies. *Journal Stud.* <https://doi.org/10.1080/1461670X.2012.664428>
- Burkitt I (2008) *Social selves: theories of self and society*. Sage, Thousand Oaks
- Clark A (2011) *Supersizing the mind: embodiment, action, and cognitive extension*. Oxford University Press, New York
- Courtois C, Merchant P (2013) An evaluation of the potential of Web 2.0 APIs for social research. In: Patriarche G, Bilandzic H, Jensen JL, Jurišić J (eds) *Audience research methodologies: between innovation and consolidation*. Routledge, London, pp 212–226
- Ellison NB, Boyd D (2013) Sociality through social network sites. In: Dutton B (ed) *Oxford handbook of internet studies*. Oxford University Press, Oxford, pp 151–172
- Enli GS, Skogerbo E (2013) Personalized campaigns in party-centred politics: Twitter and Facebook as arenas for political communication. *Inf Commun Soc* 16(5):757–774
- Facebook Platform Changelog. Retrieved from <https://developers.facebook.com/docs/apps/changelog>
- Fernandes J, Giurcanu M, Bowers KW, Neely JC (2010) The writing on the wall: a content analysis of college students' Facebook groups for the 2008 presidential election. *Mass Commun Soc* 13(5):653–675
- Fraser M, Dutta S (2010) *Throwing sheep in the boardroom: how online social networking will transform your life, work and world*. Wiley, New York
- Gencarelli TF (2006) *Perspectives on culture, technology, and communication: the media ecology tradition*. Hampton Press, Cresskill
- Gergen KJ (2009) *Relational being: Beyond self and community*. Oxford University Press
- Graph API User. Retrieved from <https://developers.facebook.com/docs/graph-api/reference/v2.3/user>
- Gross BM, Churchill EF (2007) Addressing constraints: multiple usernames task spillage and notions of identity. In: CHI EA '07 CHI '07 extended abstracts on human factors in computing systems, pp 2393–2398
- Hanna R, Rohm A, Crittenden VL (2011) We're all connected: The power of the social media ecosystem. *Business horizons* 54(3):265–273
- Haraway D (1991) *A cyborg manifesto: science, technology, and socialist-feminism in the late twentieth-century*. In: Simians, cyborgs, and women: the reinvention of nature. Routledge, New York

- Jensen JL, Scott Sørensen A (2013) Nobody has 257 friends. *Nordicom Rev* 34(1):49–62
- Jensen JL, Tække J (2013) Indledning: Facebook i den danske hverdag. In: Fra socialt netværk til medier. Samfunds litteratur
- Kietzmann JH, Hermkens K, McCarthy IP, Silvestre BS (2011) Social media? Get serious! Understanding the functional building blocks of social media. *Bus Horiz* 54(3):241–251
- Latour B (2011) Network theory, networks, societies, spheres: reflections of an actor-network theorist. *Int J Commun* 5:15
- Law J (1991) Introduction: monsters, machines and sociotechnical relations. In: Law J (ed) *A sociology of monsters: essays on power, technology and domination*. Routledge, London
- Liu J, Zhang F, Song X, Song Y-I, Lin C-Y, Hon H-W (2013) What's in a name?: an unsupervised approach to link users across communities. In: *WSDM '13 Proceedings of the sixth ACM international conference on Web search and data mining*, pp 495–504
- Lomborg S, Bechmann A (2014) Using APIs for data collection on social media. *Inf Soc* 30(4):256–265
- Lotan G, Graeff E, Ananny M, Gaffney D, Pearce I, boyd d (2011) The revolutions were tweeted: information flows during the 2011 Tunisian and Egyptian revolutions. *Int J Commun* 5:1375–1405
- Marichal J (2013) Political Facebook groups: micro-activism and the digital front stage. *First Monday* 12(2). <https://doi.org/10.5210/fm.v18i12.4653>
- Rogers R (2013) *Digital methods*. MIT Press, Cambridge, MA
- Taneja H, Webster JG, Malthouse EC, Ksiazek TB (2012) Media consumption across platforms: Identifying user-defined repertoires. *New media & society* 14(6):951–968
- Turkle S (1995) *Life in the screen: identity in the internet*. Simon, New York
- Wu S, Mason WA, Hofman JM, Watts DJ (2011) Who says what to whom on Twitter. In: *Proceedings of the international World Wide Web conference (WWW 2011)*, pp 705–714
- YourTwapperKeeper – Archive Your Social Media. Retrieved from <https://github.com/540co/yourTwapperKeeper>



Nexus Analysis as a Framework for Internet Studies

45

Malene Charlotte Larsen and Pirkko Raudaskoski

Contents

Introduction	816
Nexus Analysis as Discourse Analytic Framework	817
The Concept of Discourse	819
Mediated Action and Mediational Means	820
Site of Engagement	821
The Concept of Practice in MDA	822
Nexus of Practice (NoP)	823
Community of Practice (CoP)	824
Discourse Cycle	824
Historical Body	825
Interaction Order	826
Discourses in Place	826
Methodology: How to Conduct a Nexus Analysis	827
Phase 1: Engaging the NoP: Data Collection and Typical Data	828
Phase 2: Navigating the NoP	829
Phase 3: Changing the NoP	830
Conclusions	831
References	832

Abstract

This chapter presents a discourse analytic framework for the study of online social practices, which takes into account that these practices are constituted multimodally by the participants' communicative performances. Focusing on what people do – and not solely on what they say – is important if we wish to understand the way people use and integrate the Internet into their everyday lives. The chapter proposes a refinement of the framework nexus analysis (Scollon and

M. C. Larsen (✉) · P. Raudaskoski

Department of Communication and Psychology, Aalborg University, Aalborg, Denmark
e-mail: malenel@hum.aau.dk; pirkko@hum.aau.dk

Scollon. *Nexus analysis: discourse and the emerging internet*. Routledge, London/New York, 2004), which distinguishes itself from other discourse analytic approaches by focusing on central-mediated actions (rather than solely on discourse). The framework combines an ethnographic methodological approach to discourse analysis, inspired by mediated discourse analysis (Scollon. Action and Text: Towards an integrated understanding of the place of text in social (inter) action, mediated discourse analysis and the problem of social action. In: Wodak R, Meyer M (eds) *Methods of critical discourse analysis*. Sage, London, pp 139–183, 2001; Scollon. Mediated discourse: the nexus of practice. Routledge, London/New York, 2001), linguistic anthropology (Norris and Jones. Discourse in action: introducing mediated discourse analysis. Routledge, London, 2005), sociolinguistics, and psychology. The purpose is to identify the key (but not necessarily discursive) practices within a loosely tied “nexus of practice” (a place-bound constellation of humans, discourses, and cultural artefacts that constitute social action). The investigation is done with a focus on action as consisting of (1) discourses, (2) human interaction and social identities, and (3) historical bodies.

Keywords

Discourse studies · Nexus analysis · Methodology · Multimodality · Online social practices

Introduction

So far, most discourse analytic approaches to the study of online interaction have focused on language use (e.g., Herring 2004; Baron 2008; Goodings 2011; Seargeant and Tagg 2013; Zappavigna 2012). This chapter contributes to the new research tradition that presents a discourse analytic framework for the study of online social practices, which takes into account that these practices are constituted multimodally by the participants’ communicative performances (cp. Jones et al. 2015; Thurlow 2011). If we wish to understand the way people use and integrate the Internet into their everyday lives, it is important to focus on what people do and not solely on what they say or type online. Nexus analysis (NA) provides a helpful methodology to study this (also) practice theoretical principle of focusing on people’s doings and sayings in Internet-mediated environments (Schatzki 2012).

Thus, the chapter focuses on a refinement of the framework nexus analysis (Scollon and Scollon 2004), which distinguishes itself from other discourse analytic approaches by focusing on central-mediated actions (rather than focusing solely on discourse as a linguistic phenomenon). The framework, which is developed by Ron Scollon and Suzie Wong Scollon (2004), combines an ethnographic methodological approach to discourse analysis, inspired by mediated discourse analysis, MDA (Scollon 2001a, b), linguistic anthropology (Norris and Jones 2005), sociolinguistics, and sociocultural approaches to psychology.

The purpose is to identify the key (but not necessarily discursive in the sense of language) practices within a loosely tied “nexus of practice” (the field where humans, discourses, settings, and cultural artefacts intersect and result in social action). This is done with a focus on action as consisting of (1) “big D” discourses (e.g., education, politics, and media) that permeate the ongoing practices and that the material environment brings in, (2) human interaction and social identities, and (3) historical bodies. The situated action is then analyzed in relation to the broader sociocultural context. Nexus analysis is closely linked with ethnography, not in its traditional anthropological or sociological form but has more in common with multi-sited approaches (see Marcus 1995) such as virtual ethnography (Hine 2000, 2015). In nexus analysis, the ethnographic focus is not on groups as static units but on how the group constitutes themselves through concrete social actions. What is different from traditional ethnography is also the goal to understand the pasts of the participants, interaction order, and discourses in place that shapes the ongoing action. By concentrating on actions, nexus analysis brings forth the role of the ethnographer as someone who also participates in the actions and whose participation should not be concealed but taken into account – a stance that brings the ethical and political aspect of ethnography to focus (Scollon and Scollon 2007). Therefore, nexus analysis has also been advocated as a research tool in socio-material practice studies (Nicolini 2012).

Nexus analysis has not been developed for the study of online social practices, but, as this chapter argues, the framework is well suited for such a purpose (cp. Jones 2005; McIlvenny and Raudaskoski 2005; Larsen 2014). Based on research on the uses of social network sites (e.g., Larsen 2010), the chapter demonstrates how the framework can be used to study online social practices. The framework is holistic as language use and multimodality become equally important constitutive parts of social practices, rather than being treated as separate modes that concentrate on the textual or visual contents as isolated units. The Scollons saw this as a problem both when discourse analysis is understood as text analysis and when multimodality is treated as the analysis of visual products (Kress and Van Leeuwen 1996). In order to capture the use of the Internet as a site of everyday practices, close analyses of it as action, rather than textual or visual representation, are in great demand. Nexus analysis can bring us closer to that complex dynamics.

The chapter starts by introducing the theoretical background of nexus analysis and provides an outline of the origins of and inspiration behind the framework. The chapter then elaborates on key concepts and fundamental methodological assumptions associated with the framework and how Internet studies might benefit from these. Throughout the chapter, it is illustrated how a nexus analysis of Internet-mediated social practices may be conducted and how empirical data is applied in the process.

Nexus Analysis as Discourse Analytic Framework

By not focusing on language but rather on the social actions mediated by cultural artefacts such as the various material forms of language, nexus analysis differs from other approaches to discourse analysis. Nexus analysis is developed by Ron Scollon

and Suzie Wong Scollon (2004) as a theoretical and methodological framework and is an extension of the ideas behind mediated discourse analysis (MDA) and an attempt to spread out its complexity to integrate “micro” as well as “macro” dimensions (Norris and Jones 2005). The two approaches are thus inseparable. The Scollons’ academic background is within the various fields of language research which examine linguistic usage as situated practice in specific material, cultural, and social surroundings (anthropological linguistics, interactional sociolinguistics, critical discourse analysis, new literacy studies, sociocultural psychology, and intercultural communication). The growing number of researchers using nexus analysis is interested in the ways in which people engage in social interaction within a wide range of mediated contexts (professional as well as recreational contexts). Moreover, they are studying how discourse and social relations are mediated by means of interactions, people, artefacts, space, and time. Thus, MDA poses the following questions: “What is/are the social action(s) going on here?” followed by “What is the role of discourse in this/those action(s)?” (Jones and Norris 2005; Scollon 2001b). In some mediated actions, language may be a key element, whereas in other mediated actions, different mediational means may be more prominent. Part of conducting a nexus analysis is to examine the relevance of specific social actors, mediated actions, and mediational means in relation to the practice and field of study which the scholar is investigating and to examine how they interact.

Scollon is indebted to many researchers, such as Lev Vygotsky, Erving Goffman, Gunther Kress, Theo van Leeuwen, Norman Fairclough, and James Paul Gee. Though Scollon’s approach is particularly indebted to critical discourse analysis, in time, he became more critical of certain aspects of this approach. According to Scollon, the approach is too focused on text and discourse (see next section for a discussion on the concept of discourse in nexus analysis). Instead, we should examine and detect texts in action or, in more general terms, the actions occurring – with or without the presence of language. Thus, one of the fundamental principles of Scollon’s approach originates from Vygotsky’s sociocultural approach to action (Wertsch 1998).

By replacing language with action as the basis for understanding human behavior, MDA is approaching conversation analysis. Traditionally, conversation analysis was equally centered on language as was critical discourse analysis, using close analyses for studying how we construe meaning, identity, etc. in coordinated turns-at-talk. However, from the offset, MDA has focused on the material means and surroundings which render actions possible. According to Raudaskoski (2010), as a result of some of the recent multimodal developments in interaction analyses based on conversation analysis, the key points of departure of MDA and Goodwin’s *contextual configuration*, for instance, have become nearly identical.

An important distinction between MDA and conversation analysis (or other traditions of close analysis) is found in the methodological framework of MDA, called nexus analysis, which seeks to understand how situated meaning-making is linked to other spaces and times, i.e., to other practices. Thus, conducting studies which observe individuals, situations, and places is becoming increasingly popular. Application of this approach may cause the analysis parameters to become extended

so as to include any historical, social, cultural, or political process which may have rendered possible a specific mediated action (involving specific individuals). This is comparable to Latour's (2005) actor-network theory (ANT) and Hine's (2000, 2015) virtual ethnography (McIlvenny and Raudaskoski 2005). Larsen (2010, 2013) argues that MDA and NA are particularly suitable for providing the framework for studies of Internet-based practices such as practices seen on social media which contain both textual and visual elements of action and social interaction.

The theoretical background of MDA may be regarded as socio-constructive in that it concerns the ways in which individuals create meaning, identity, etc. locally and render these materials, i.e., add the bodily and material options available to actors in the circumstances. When applying nexus analysis, scholars are more interested in the effects of local constructions as seen from a sociohistorical perspective (i.e., how they have been formed by past experiences, situations, and places) and on how they contribute toward shaping the future. Therefore, in addition to ANT, nexus analysis may be applied to recent approaches to socio-materiality (such as Barad 2007; Nicolini 2009).

The Concept of Discourse

In discourse analysis, discourse and language (as text or speech) are often regarded as more or less interchangeable. Many discourse analyses base specific analyses of "the social" on language, and this is where Scollon provides a different approach to analysis. With MDA, Scollon seeks to:

reformulate the object of ... study from a focus on the discourses of social issues to a focus on the social actions through which social actors produce the histories and habits of their daily lives ... (Scollon 2001a, p. 140)

Thus, it becomes clear that mediated discourse analysis focuses on social actions, which are closely related to the historical body or habitus (i.e., habits, regularities, and experience through time; cf. Bourdieu 1977), rather than on discourses or language. In other words, discursive practice is regarded as one form of social practice, though not the only one. This interrelates with discourse being *one* of the means through which society and culture are constituted (Scollon 2001a). Scollon holds the view that if we only include discourse in our analysis (discourse being text or speech), we perceive only very little of what is actually happening in social situations.

Social action is deeply rooted in practice (habitus, will, and judgment) and thus cannot be reduced to rational, logical, and objective analyses; hence, studying discourse *about* actions rather than studying the actions themselves gives rise to methodological problems. Therefore, that which is conveyed by social actors in and about their social practice might not correspond to their actual habitus; though their actions are based on their former experience (habitus) and their situated judgment, they may not be capable of verbalizing these actions on request; "these discourses

are not likely ever to grasp the bases in habitus for these actions which are largely outside of the awareness of social actors" (Scollon 2001a, p. 145). Thus, since their actions are not only discourse-based, the utterances of social actors cannot be taken at face value. A transcription of an interview, therefore, does not constitute an adequate empirical basis of a mediated discourse analysis. Instead, an analysis should include actual mediated actions (such as backchanneling and tweeting during a conference presentation, showing examples from the Internet in teaching, taking part in an online multiplayer game using headsets, partaking in a chat room discussion, or using Tinder as a dating app on the phone) which may have been collected through participant observation.

This might imply that the concept of discourse is not relevant for MDA; however, this is far from the case. Most of the social issues targeted by MDA are actually mediated by discourses, and discourses often constitute the key analytical focal point (Scollon 2001a, p. 145); consequently, Scollon prefers the name mediated discourse analysis over other suggestions, such as "mediated action analysis" (Wertsch 1991, 1998). Mediated discourse analysis employs Gee's (1999) two perceptions of discourse: narrow and broad. Anything connected to the local formation of meaning is referred to as "discourse with a small d." The concept of discourse with a small d may refer to "language in social interaction" (Scollon and Scollon 2004, p. 2). This might constitute a good morning greeting online, a Skype phone call or an email, and also uploading of a video to a video blog, a report, or a news item, i.e., instances in which language is used for performing actions in the social world. Discourse in a broad sense covers more than just language. MDA emphasizes the need to understand how society and culture ("Discourse with a capital D") are reproduced through actions which emanate from the personal experiences and stories of the actors (these stories and experiences are always related to society and culture and are not merely individual processes). This broad sense of discourse bears resemblance to the general term semiotics (cp. Fairclough's (2013) later use of *semiosis* rather than discourse). This may refer to academic discourse, medical discourse, youth discourse, etc., i.e., to "Discourses with a capital D" (Gee 1999) in which a number of other discourses are included.

Readers of Scollon might find his writings on MDA confusing; MDA employs several layers of discourse, and in his texts, Scollon does not necessarily distinguish between these layers. Thus, mediated discourse analyses should always provide an explanation of their application of the concept of discourse. In addition to discourse, a number of other concepts are key to mediated discourse analysis – these will be presented in the following.

Mediated Action and Mediational Means

Since social conduct always includes a mediational means and vice versa, Scollon has chosen to apply the term *mediated action* rather than just social action. This basic concept thus refers to the dialectical relation (of mutual impact) between action and material (cultural) artefacts which enables action. These artefacts are called

mediational means, a term that refers to both semiotic and psychological tools (language) and material tools (computers, media, furniture, design, clothing, gestures, etc.); moreover, people can act as mediational means. Mediational means are always used in dialectical interaction with the structures associated with the habitus involved in the performed actions. In other words, we use language, technology, and other mediational means on the basis of our experiences, which are always socio-historical (that is, shaped in relation to the world and its inhabitants, and not solely individual). Thus, the importance of mediational means for any action is always multiple and includes both historical potentials for application and limitations (Scollon 2001a). Thus, the sociohistorical “load” – i.e., with the application of mediational means follows participation in larger discourses (see Gee) – embedded in all mediational means is a central point in MDA.

A teaching situation is an example of a mediated action which includes a wide range of mediational means, such as language, books, notes, blackboard and chalk, computer, projector, screen, PowerPoint presentation, microphone, chairs, tables, the architecture of the room, the schedule, lecturer, students, secretarial support, curricula, etc. How the actual teaching situation is conducted depends on several factors, such as the lecturer’s habitus, teaching experience and interaction with technical aids, and also on the mediational means themselves; do any technical issues occur, can all students see the lecturer’s slides, and how are the acoustics of the room? In addition to the actions themselves, all of these elements are included in the mediated discourse analysis.

Another example of a mediated action is the act of uploading an image or updating a personal status on a social media profile. Such actions include a number of other mediated actions, such as turning on a computer/smartphone, logging on to the profile, clicking the icon for sharing a message or image, clicking “share,” reading and responding to any reactions to an update or image, etc. Above all, MDA would focus on the actual social action of writing an update or uploading an image and then on the role of discourse (see Larsen 2010, 2013).

Site of Engagement

Scollon refers to the time and social space in which mediated actions occur as “site of engagement”:

This is the-real time window that is opened through an intersection of social practices and mediational means [...] that make that action the focal point of attention of the relevant participants.” (Scollon 2001b, p. 3)

The term is inspired by practice and activity theory (particularly by Wertsch 1985, 1991) and refers to the social circumstances which render possible the mediated actions. A snapchat “conversation,” a group conversation on Facebook Messenger, a text message exchange, or commenting on a YouTube video might constitute examples of specific “sites of engagement.” All mediated actions are unique and

cannot be repeated; thus, a moment of action - a site of engagement - cannot be exactly the same ever again. When conducting mediated discourse analysis, the focal points of the analysis are the specific sites of engagement; in other words, they constitute the empirical backbone of the mediated discourse analysis.

The Concept of Practice in MDA

In a mediated action, social practice and mediational means merge, reproducing social groups, life stories, and identities (Scollon 2001a, b). Thus, a mediational action can only be understood in relation to practice. MDA operates with a relatively narrow concept of practice (Scollon uses the term “a practice” in singular form) in which individual practices are narrowly considered, such as the act of “liking” something on a social media site, which may be performed in various different ways or situations. For instance, Eranti and Lonkila (2015) point to a wide variety of purposes and motives connected to using the Like button on Facebook, from dating efforts, impression management, and identity construction to conversation regulation and maintenance of social ties (Eranti and Lonkila 2015). Thus, practice is closely connected with habitus; based on our own experiences, we produce interpretations and perceptions of the world which we assume to be recognizable to others:

A practice is a historical accumulation within the habitus/historical body of the social actor of mediated actions taken over his or her life (experience) and which are recognizable to other social actors as “the same” social action. (Scollon 2001a, p. 149)

Scollon was particularly interested in how human beings are “encultured” (Scollon and Scollon 1995): how we learn to perceive various specific actions as meaningful social practices (Scollon and Scollon 2004, p. 12) that constitute social order (or structures). Consequently, practice and social structures are not merely to be regarded as context but also as an interesting part of specific analyses (Scollon 2001b, p. 4). Thus, an analysis must concentrate on (the irrefutable) implementation of specific practices (such as the act of taking an ugly photo of yourself, posing with a double chin) and understand how this practice is constituted as a specific social or mediated action (the act of sending a selfie to a friend on Snapchat) (Kofoed and Larsen 2016).

Not until actions are understood and used in a similar way by a majority of actors do they become *social* practices. Another definition of a mediated action becoming a “social practice” is when the mediated action is considered a “token,” an isolated instance, of actions with a history: “when they are instances or tokens of a chain of such [mediated] actions which are taken to have a history” (Scollon 2001b, p. 69). Individuals, *historical bodies*, are complex networks of, in most cases, experienced (and always acquired) social practices. The following will provide a brief discussion of two groups, constituted by their members through social practices: nexus and community.

Nexus of Practice (NoP)

The meaning of the word “nexus” is a link between different ideas and objects, connecting these in a sequence or network (Scollon and Scollon 2004, p. viii). The term was coined for defining situations which share common features but cannot be considered a community of practice, CoP (Lave and Wenger 1991). As with all concepts within MDA, the situated formation and the participants’ understanding are essential; thus, that which may be a nexus of practice to some participants may constitute an utterly obscure situation to others. An example may be typing the acronym “PWONED” in a group chat. A chat member who is not familiar with online gaming slang may not understand what is being said to them and why this specific type of slang is used in the concrete situation. Another example could be the uses of hashtags on Instagram. Thousands of people who do not know each other use the same hashtags on Instagram. For instance, there are over 61 million photos on Instagram with the hashtag #fitfam. The users who employ this fitness-related hashtag are part of the same nexus of practice. They know what the hashtag means, when it is appropriate to use it, with what kind of photos it makes sense, and so forth. People who are not into communicating their fitness goals online may not know what meaning to apply to the photos of healthy food or muscular bodies.

The field in which people, discourses, places, and mediational means intersect and become social actions is referred to as “nexus of practice” by Scollon and Scollon. This is not a physical location, rather it is a genre of activities and the people participating in these activities (Scollon 2001a, p. 150). Thus, Scollon defines “nexus of practice” as a specific discourse or a system of activities in which the actors have learnt fairly similar ways of managing various situations in practice. If they share similar experiences, i.e., if two or more actors have a shared understanding of different situations and how to act in these situations, they constitute a nexus of practice: “two agents who have sufficiently overlapping habitus can be considered members of the same nexus of practice” (Scollon 2001b, p. 71). This concept also allows us to address intercultural differences as differences in habitus, in other words life experiences. Public sites are typical examples of nexus practices: individuals log on to Facebook, share a video on YouTube, play Minecraft, etc. They are reasonably confident as to how to participate in these practices though they may not (necessarily) know (all) the other participants. A recent phenomenon in online discussions is the growing amount of bots participating that might pass as real people (unlike, for instance, when one has a dialogue with Siri-the-bot on the iPhone). The bots are specific types of mediational means that are programmed to do specific actions in specific sites. They show that the programmer(s) have a good understanding of typical ways of participating in the nexus of practice.

The purpose of the methodological framework of nexus analysis is to analyze a specific nexus of practice taking into account the various mediated actions and mediational means that constitute it.

Community of Practice (CoP)

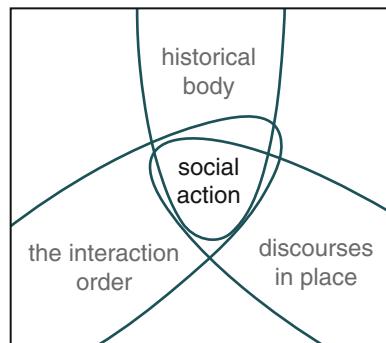
Scollon defines NoP by making a distinction from community of practice (CoP) (Lave and Wenger 1991). According to Scollon, CoP is a group of people who regularly interact for a common purpose or goal (Scollon 2001a, p. 151). Such groups might exist in workplaces (intranet), in a group of friends (Facebook), or in an activist group on an encrypted site. This provides for a more well-defined definition of Lave and Wenger's (1991) popular definition of the community of practice of organizations: a CoP serves a specific purpose (such as working together as a group, planning a reunion party, or organizing a demonstration), its members know each other (who completes specific tasks; identity), etc. New members of a CoP must learn how to perform the specific practices required for reaching the goals, and they must make themselves acquainted with the other members. Thus, if the analysis aims to uncover the “silent” assumptions within an organization (formal or informal), observing a new member of a CoP might prove beneficial: whenever a novice goes through the process of learning to participate in the practices of a CoP, these “silent” assumptions manifest themselves.

When the explicit membership of a group becomes the focal point of an analysis, Scollon uses the term CoP. When a group of people develops from constituting a Nexus to forming a community of practice, the term “technologization” is used: “the linkages and so forth are being made regular enough that they can in themselves be recognized and used as mediational means in taking other actions” (R. Scollon 2001a, p. 151). A nexus of practice may consist of several small communities of practice and close-knit groups within the overall nexus of practice. On Instagram, users of a specific hashtag may become friends, bonding around the specific topic that originally attracted them to Instagram – thus, evolving from a nexus to a community of practice.

Discourse Cycle

Conducting a nexus analysis may pose a challenge because “in some real sense just about everything we might know about can circulate through any particular moment of human action” (Scollon and Scollon 2004, p. 19). For this particular reason, Scollon and Scollon developed nexus analysis as a methodological framework for identifying the most significant elements for further analysis. In the next section, the chapter will account for the overall steps of the research approach recommended for nexus analysis. However, before doing so, the central idea behind both mediated discourse analysis and nexus analysis will be discussed. It is important to understand mediated actions, actors, and mediational means as parts of a sociohistorical process – they have a past and are creating a future. As the chapter has sought to emphasize, we ought not merely analyze specific situations regardless of their contexts; instead we need to address a vast number of surrounding factors (such as how do the mediated actions of a specific *site of engagement* relate to other sites and practices and Discourses?). The question then becomes how can we address this in a specific

Fig. 1 A discourse cycle
(Scollon and Scollon 2004,
pp. 20 and 154)



analysis? How is it possible to make an analytically valid cut in the complexity in which all mediated actions and social practices are embedded? This is where the concept “discourse cycle” from nexus analysis is useful. The concept of discourse cycle refers to the fact that a social action occurs in an intersection between:

“...the historical bodies of the participants in that action, the interaction order which they mutually produce among themselves, and the discourses in place which enable that action or are used by the participants as mediational means in their action.” (Scollon and Scollon 2004, p. 153)

Figure 1 illustrates how in nexus analysis social action is analyzed as a number of circulating discourses (**discourses in place**; discourse is to be understood in both a narrow and a broad sense, and place is the space and all the meaningful materials which are applied), a specific form of encounter between people and the social identities and relationships played out in this encounter (**the interaction order**), as well as the (life) experience of the individual actors (**historical body**). In the following, the chapter will provide a more detailed description of the three elements of the model.

Historical Body

As individuals, whenever we enter into social contexts, we use our past experiences. The concept “historical body” refers to our overall experience with social actions; and by virtue of our “historical body,” we learn to use various mediational means. By way of example, new users of a social network site may not be able to use the features of this site, because similar experiences are not included in their overall (life) experience or habitus, while this might come easier to other users more experienced in using the Internet or social media. Undoubtedly, more experienced users will automatically perform a number of mediated actions since over time, these have become embedded in their practice and thus in their “historical body” (Larsen

2010). The same also applies to language usage, emoticons, acronyms, gestures, and artefacts.

Scollon and Scollon adopted the concept “historical body” from Nishida (1958), and, although highly inspired by Bourdieu’s (1977, 1998) “habitus,” they prefer to use this term. Their preference for “historical body” is due to its focus on movement “from the formed to the forming” (Nishida in Jones 2008, p. 247). It does not merely concern “to be” but rather “to become.” Thus, Scollon and Scollon perceive our “historical body” as dynamic and organic; Suzie Scollon very pertinently refers to the concept using the metaphor of a compost heap. She sees it as a “compost heap of social practices” (Scollon 2003, p. 193); whenever new experiences and social practices are added, the heap changes slightly; this means that the individual is not merely a member of a segment (habitus) but an active participant in the construction and development of social practices. Thus, habitus is not merely an internal storage of past experiences but also the basis for the development of new social practices (Jones 2008, p. 247).

In short, our “historical body” is unstable (as opposed to Bourdieu’s stable term habitus, which he used for characterizing the features of population groups), and it engages in continuous interaction with the environments in which we move. Analytically, this concept reminds us that we cannot understand the social actions we seek to analyze without taking into account the history of the involved actors (Jones 2008, p. 245).

Interaction Order

Scollon and Scollon are generally inspired by Goffman’s “interaction order” (1983), and they recognize that social actors behave differently with different people in different situations. The concept of interaction order is applied in nexus analysis for describing the relationship between the participants in the social situation which is being analyzed. The dynamics of the interaction order may vary according to whether participants are alone, in pairs (Goffman’s “with,” which is two people working together), or in small or large groups and in an intimate situation or in public. One might argue that we are all part of some form of interaction order, starting when we eat our breakfast in the morning and ending the moment we go to bed at night. Becoming familiar with the interaction orders existing within the central discourse cycles of the NoP being analyzed is essential to the final analysis.

Discourses in Place

By including the term “discourses in place” (Scollon and Scollon 2003), Scollon and Scollon seek to emphasize the significance of the material space in which social actions occur. Any given place in the world is made up of complex linkages or units of discourse which are circulating through it. Some of these may circulate slowly (such as architecture and layout), while others may circulate more rapidly (such as

topics of conversation). Correspondingly, some discourse may be distantly related to the specific situation of an analysis, while others may be more relevant. The term “discourses in place” stresses the need for conducting empirical studies of the relevance of specific discourses in relation to the place in which the social actions occur; the discourses may be either relevant (in the foreground) or irrelevant (in the background). Various “discourses in place,” understood in both a narrow and a broad sense, are continuously circulating through our actions, and some of these are mediational means of the interactions in which we participate.

With their trichotomy of the concept of the discourse cycle, Scollon and Scollon propose that specific instances of social action are not to be analyzed in isolation but rather in more general terms in relation to the sociocultural NoP in which they exist. All social actions are shaped by various discourse cycles which all refer to the specific past or future discourses of specific situations or “sites of engagement” within a nexus of practice or to different aspects of these discourses. “To put it crudely, a nexus analysis would like to document or record everything that might be relevant to understanding the historical antecedents of a social action as well as the unfolding outcomes of that action” (Scollon and Scollon 2007, p. 621). The chapter will now elaborate on how to conduct a nexus analysis.

Methodology: How to Conduct a Nexus Analysis

With nexus analysis as the methodological framework, Scollon and Scollon provide a strategy for conducting mediated discourse analysis. Scollon and Scollon propose that the nexus analysis consists of three stages: (1) **engaging the nexus of practice**, which involves ethnographic engagement and data collection; (2) **navigating the nexus of practice**, which is where the researcher organizes and analyzes the data; and (3) **changing the nexus of practice**, which is the phase where the researcher considers his or her ability to affect or change the specific practices or problems that have been studied (Fig. 2).

As stated by Norris and Jones, these three phases are “really a kind of reflective process, involving a multitude of contingencies and constant interactive decision making on the part of the researcher” (Norris and Jones 2005b, p. 201). Given that no NoPs are identical, researchers must organize their path through the three phases by applying “whatever means seem appropriate” on the basis of their knowledge at the time (Norris and Jones 2005b, p. 201). In other words, the elaborate recommendations (of the “field guide” provided at the back of the book (Scollon and Scollon 2004)) are tools which may be applied to specific research projects rather than an exact formula to which researchers must adhere. Thus, Scollon and Scollon define the nexus analysis as “organic” – “a kind of research that grows and develops and changes structure as it progresses” (Scollon and Scollon 2004, p. 148). However, they recommend for the three phases to be scheduled over a long-term period (Scollon and Scollon 2004, p. 152).

During phase 1 (**engaging**), the task of the researchers is to identify the key social actors and actions and to reach a “zone of identification” within their field of

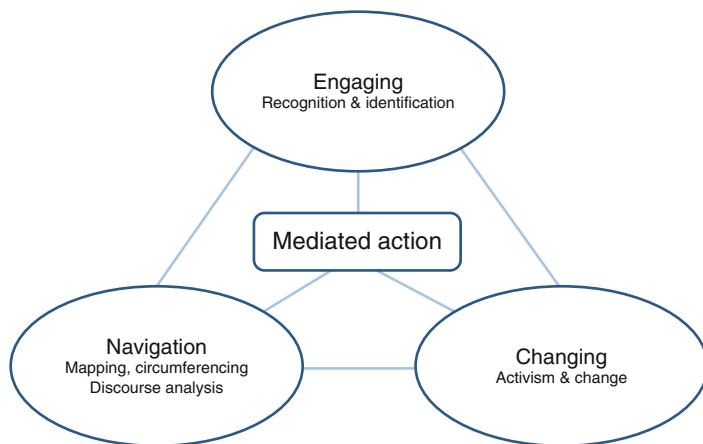


Fig. 2 The three stages of a nexus analysis (adapted from Scollon and Scollon 2004, p. 153)

analysis. During phase 2 (**navigating**), the researchers map and organize the data collected in phase 1, i.e., do documentation and analysis. Phase 3 (**changing**) includes elements of change. During this final stage, the ethnographer explores how the analysis has influenced or could be used to influence the field of analysis.

Phase 1: Engaging the NoP: Data Collection and Typical Data

The initial phase of the nexus analysis involves obtaining an understanding of the practices and, in particular, the experiences of the participants: of how they perceive and verbalize their mediated actions. Thus, this suggests combining different methods. For identifying the key mediated actions, Scollon and Scollon recommend the collection of at least four types of data during the initial stage of the nexus analysis (Scollon 2001a, pp. 152–153; Scollon and Scollon 2004, p. 158):

1. Members' generalizations (such as questionnaire studies).
2. Neutral ("objective") observations (such as video observations).
3. Individual member's experience (such as research interviews).
4. Observer's interactions with members (and discussions of any clashes between 2 and 3).

The different types of data will provide for equally different perceptions of and perspectives on the nexus of practice and thus ensure a thorough methodological triangulation. These different methods may produce different results; for example, the results of the objective observations of practices may differ from the results of research interviews with the participants involved in those practices (individual experiences). This provides for an opportunity for researchers to interact with the participants on these findings and is not seen to pose a problem for the further research.

The initial stage of the nexus analysis will provide researchers with an insight into how different actors perceive different situations. Researchers may then confirm their findings by finding similar situations and asking the people engaging in similar practices whether or not they can recognize the researchers' analyses and descriptions of the central mediated actions. This may be done through focus group interviews or, as Larsen (2010) did, keeping a research blog where analyses were posted and commented on by actual members of the practice she was studying.

The combination of several different methods in the efforts to reach a "zone of identification" (Scollon and Scollon 2004) provides a good overview of the nexus of practice. Reaching a zone of identification means that researchers merge their research activities with their participation activities within the NoP. In other words, "objective distance" is not a recommendation in nexus analysis. By engaging actively in the nexus of practice, researchers are able to establish their research topic, identify the key social actors, observe the interaction order, and identify the central cycles of discourse within the field (Scollon and Scollon 2004, p. 154).

Larsen's (2010, 2014) studies are an example of the application of a mixed methods approach to nexus analysis. In connection with her research on children and young people's use of social network sites, Larsen applied a long list of methods in order to obtain a "zone of identification" within the field. She conducted a longitudinal virtual ethnographic study of the field where she was present as a participant observer with her own profiles on the at the time most popular social network sites. These "neutral observations" were captured by means of screenshots and field notes. Through online questionnaires she was able to ask questions about the specific mediated practices that, according to the participatory observations, had proven to be central. Likewise, she carried out focus group interviews and individual conversations in order to get access to individual members' experiences and articulations.

Researchers having already familiarized themselves with the practice as participants may skip this stage. For instance, given their knowledge of transnational adoption, McIlvenny and Raudaskoski (2005) chose to skip the initial stage of their analysis. Among nexus analytical approaches to digital practices is Rish's (2011) study on how students write together. Rish studied digital collaborative fiction writing and used interviews and personal wikis written by students in an effort to analyze how their personal experiences influenced the resources applied to their production of fiction (such as digital collaboration, using existing images or images produced by themselves and digital cartography). Wohlwend and Hansfield (2012) is an example of how nexus analysis can be used as a method to study young children's participatory online literacy practices (see also Hafner et al. 2015).

Phase 2: Navigating the NoP

In the second phase of the nexus analysis, the collected data is scrutinized with specific analytical methods. In their field guide, Scollon and Scollon make suggestions as to how researchers might approach this phase. One of their recommendations is as follows:

We suggest that you should make broad-stroke maps of the nexus of practice to begin with. Then select some cycles to follow out along their circumferences – the historical body of a person, a practice, a sequence of actions in an activity, a discourse that looks promising. (Scollon and Scollon 2004, p. 171)

The data used in this stage may have been collected in phase 1; however, collecting new data may be necessary. The analytical approaches and theories applied depend on the nature of the research question. During this stage, researchers need not be mere observers; by contrast, it is commendable that they allow participants to engage in the process of shaping the research questions and to assist the researchers in forming an understanding of their actions and practices. Nexus analysis not only aims to provide an understanding of the occurrences of the world; it may also provide as a tool for changing undesirable practices in organizations and society (cp. participatory design and other inclusive approaches). How to use nexus analysis for bringing about change depends on the research question and the nature of the research project. Scollon and Scollon (2004) discuss their research within nexus analysis (ethnography) and focus on their research projects conducted in Alaska. They began their research by identifying a problem, the problems Native Americans had with obtaining university education. They report on the institutional and cultural practices that made it difficult for them to establish an Internet-based curriculum that would provide equal opportunities for students from remote rural areas to participate in classes. They began to observe the various practices in which these students participated, including the various institutional procedures which formed part of the problem. Their research provided an explanation for how various culturally embedded interactions might be at the core of the problem.

During the stage of navigation, researchers delve deeper into the mediated actions identified as key issues. In practice, this is done by observing actors (historical bodies), situations (interaction orders), or places (discourses in place). For researchers to fully understand how a mediated action has emerged and what the action entails, they need to engage in a long-term process of observation. The collected data allows researchers to map the various process-related events (such as to what extent researchers need to understand temporary actions, places, actors, etc. to be able to analyze this site of engagement). Various theoretical concepts may be applied to the mapping, including Iedema's resemiotization (Iedema 2000) or Clarke's situational analysis (2005). Several approaches within discourse analysis may be applied to the analysis of Internet-related practices and mediated actions, including mediated discourse analysis, critical discourse analysis, interaction analysis, and discursive psychology. The choice of the approach(es) depends on the research interest.

Phase 3: Changing the NoP

The purpose of this final phase of nexus analysis is to analyze how the engaging and navigating phases have affected or their results can be used to change the NoP. However, Scollon and Scollon acknowledge that the process of change is

continuous. Change is the result of the researcher's work toward documenting mediated actions, engaging in discourse with the participants, and specifically construing new opportunities for action (Scollon and Scollon 2004, p. 152). Thus, according to Scollon and Scollon, "inquiry is social activism" (Scollon and Scollon 2004, p. 149), and assuming the task of analyzing a nexus of practice inevitably entails changing or affecting it.

One example of how an Internet researcher took part in changing and affecting the studied NoP comes from Larsen's (2010) research on children and young people's use of social network sites. Here, her starting point was understanding the young actors' central mediated actions and experiences on their own terms. The research took place at a point in time when young people's use of social media was very much discussed and received a huge amount of negative coverage in the news media and in the public debate in general (see Larsen and Ryberg 2011). By communicating her research results to various groups of actors such as the press, parents, professionals, or educators, she took part in giving young people a voice in the public debate. This helped nuance the debate on young people's use of social media in Denmark and provided a greater and better understanding on young people's online practices. Similarly, danah boyd (e.g., 2008) has pointed out how she became a "youth advocate" in the USA in similar discussions on that topic.

However, nexus analysts must bear in mind that they cannot instigate unilateral social changes (Scollon and Scollon 2004, p. 178), nor can they predict or control the elements of change brought about by their analysis (Scollon and Scollon 2004, p. 149). In any case, researchers ought always to consider and discuss any elements of change which *might* be associated with their nexus analysis.

Conclusions

Nexus analysis is merely one answer to the specific dilemma faced by many Internet researchers of discourse, communication, and practices: evidently, things get done in everyday online practices; on the other hand, the sociocultural system provides for the framework of these. Where, then, do we place our focus? MDA perceives our specific practices as historically and socially contingent, and this allows us to focus on both of these contingency approaches, especially when applying nexus analysis as our ethnographic research framework. MDA and NA emanate from the growing interest in solving practical societal issues through research. This has also turned into a political demand for university research. In combination, MDA and NA constitute a flexible framework for managing empirically based research questions. It is important to note that NA is merely a resource of questions which may be applied to specific research projects, according to the nature of the research, rather than an exact formula.

The validity of MDA and NA is determined by the extent to which the researchers are able to understand the participants' experience with the identified actions (the "engaging" phase): observations, interviews, etc. provide for a preliminary understanding (which the researchers may then determine through focus group interviews

on similar NoPs or CoPs) on the basis of which researchers choose specific mediated actions for analysis. (The analytical tools applied in the navigation stage have their own internal validity criteria).

Initially, MDA and NA are perceived as complex approaches which are highly demanding for researchers, and this is not far from the truth. MDA and NA are comparable to many other approaches to discourse analysis: rather than relying on simple models or easy solutions, MDA and NA seek to manage the complexity of online and offline social life, and this inevitably adds to the complexity of the approaches. This can be said about all analytical approaches: the best way to learn how to use them is by applying them!

Owing to the flexibility of NA, the applications of MDA and NA are virtually limitless; they merely require for researchers to take an interest in mediated actions (how they occur or how they are described in online texts, media, etc.). Thus, nexus analysis is applicable to numerous different Internet studies that seek to focus on mediated actions rather than language.

References

- Barad K (2007) Meeting the universe halfway: quantum physics and the entanglement of matter and meaning. Duke University Press, Durham
- Baron NS (2008) Always on: language in an online and mobile world. Oxford University Press, Oxford
- Bourdieu P (1977) Outline of a theory of practice. Cambridge University Press, Cambridge
- boyd d (2008) Why youth (heart) social network sites: the role of networked publics in teenage social life. In: Youth, identity, and digital media. The MIT Press, Cambridge, pp 119–142
- Clarke AE (2005) Situational analysis: grounded theory after the postmodern turn. Sage, Thousand Oaks
- Eranti V, Lonkila M (2015) The social significance of the Facebook Like button. First Monday (6):20. <https://doi.org/10.5210/fm.v20i6.5505>
- Fairclough N (2013) Critical discourse analysis. The critical study of language. Routledge, London
- Gee JP (1999) An introduction to discourse analysis: theory and method. Routledge, London
- Goffman E (1983) The interaction ritual. Am Sociol Rev 48:1–19
- Goodings, L. (2011) The Dilemma of Closeness and Distance: A Discursive Analysis of Wall Posting in MySpace. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research 12, No 3 (2011): Qualitative Archives and Biographical Research Methods
- Herring SC (2004) Computer-mediated discourse analysis: an approach to researching online behavior. In: Barab SA, Kling R, Gray JH (eds) Designing for virtual communities in the service of learning. Cambridge University Press, New York, pp 338–376
- Hine C (2000) Virtual ethnography. Sage, London
- Hine C (2015) Ethnography for the internet: embedded, embodied and everyday. Bloomsbury Publishing, London
- Hafner CA, Chik A, Jones RH (2015) Digital literacies and language learning. Lang Learn Technol 19(3):1–7 Retrieved from <http://llt.msu.edu/issues/october2015/commentary.pdf>
- Iedema R (2000) Bureaucratic planning & resemiotisation. In: Ventola E (ed) Discourse and community: doing functional linguistics. Narr Verlag, Tübingen, pp 47–70
- Jones R (2005) Sites of engagement as sites of attention: time, space and culture in electronic discourse. In: Norris S, Jones R (eds) Discourse in action: introducing mediated discourse analysis. Routledge, London, pp 144–154
- Jones R (2008) Good sex and bad karma: discourse and the historical body. In: Bhatia VK, Flowerdew J, Jones R (eds) Advances in discourse studies. Routledge, New York, pp 245–257

- Jones RH, Norris S (2005) Discourse as action/discourse in action. In: Norris S, Jones RH (eds) *Discourse in action. Introducing mediated discourse analysis*. Routledge, London, pp 3–14
- Jones RH, Chik A, Hafner CA (2015) Discourse and digital practices: doing discourse in the digital age. Routledge, New York
- Kofoed J, Larsen MC (2016) A snap of intimacy: Photo-sharing practices among young people on social media. First Monday, vol 21, number 11. 07 Nov 2016. Retrieved from <http://firstmonday.org/ojs/index.php/fm/article/view/6905>
- Kress GR, Van Leeuwen T (1996) *Reading images: the grammar of visual design*. Routledge, New York
- Larsen MC (2010) *Unges og online sociale netværk: En neksusanalytisk undersøgelse af medierede handlinger og offentlige diskurser (Youth and online social networking: a nexus analytic study of mediated actions and public discourses)*. PhD thesis, Department of Communication and Psychology
- Larsen MC (2013) *Unges identitetsdannelse på Facebook*. In: Jensen JL, Tække J (eds) *Facebook. Fra socialt netværk til metamedie*, 1 udg. Samfundsletteratur, Frederiksberg, s 157–185
- Larsen MC (2014) *Internetbaseret feltarbejde, spørgeskemaer og kvalitative interview: Unges brug af sociale medier*. I P. Gundelach, R. S. Nielsen, & M. Frederiksen (red.), *Mixed methods*. (s. 159–189). Kapitel 7. Hans Reitzel
- Larsen MC, Ryberg T (2011) Youth and online social networking: from local experiences to public discourses. In: Dunkels E, Fränberg GM, Häggren C (eds) *Youth culture and net culture: online social practices*. IGI Global, Hershey
- Latour B (2005) *Reassembling the social: an introduction to actor-network-theory*. Oxford University Press, Oxford
- Lave J, Wenger E (1991) *Situated learning: legitimate peripheral participation*. Cambridge University Press, Cambridge, UK
- Marcus GE (1995) Ethnography in/of the world system: the emergence of multi-sited ethnography. *Annu Rev Anthropol* 24:95–117
- McIlvenny P, Raudaskoski P (2005) Mediating discourses of transnational adoption on the internet. In: Norris S, Jones RH (eds) *Discourse in action: introducing mediated discourse analysis*. Routledge, London, pp 62–72
- Nicolini D (2009) Zooming in and out: studying practices by switching theoretical lenses and trailing connections. *Organ Stud* 30(12):1391–1418
- Nicolini D (2012) *Practice theory, work & organization, an introduction*. Oxford University Press, Oxford
- Norris S, Jones RH (2005) Methodological principles and new directions in MDA. In: Norris S, Jones RH (eds) *Discourse in action. Introducing mediated discourse analysis*. Routledge, London, pp 201–206
- Raudaskoski P (2010) “Hi Father”, “Hi Mother”: A multimodal analysis of a significant, identity changing phone call (mediated on TV). *J Pragmat* 42:426–442
- Rish RM (2011) Engaging adolescents’ interests, literary practices, and identities: digital collaborative writing of fantasy fiction in a high school English elective class. Dissertation. The Ohio State University. Retrieved from https://etd.ohiolink.edu/etd.send_file?accession=osu1316521200&disposition=inline
- Schatzki T (2012) A primer on practices. Theory and research. In: Higgs J, Barnett R, Billett S, Hutchings M, Trede F (eds) *Practice-based education: perspectives and strategies*. Sense Publishers, Rotterdam, pp 13–26
- Scollon R (2001a) Action and text: towards an integrated understanding of the place of text in social (inter)action, mediated discourse analysis and the problem of social action. In: Wodak R, Meyer M (eds) *Methods of critical discourse analysis*. Sage, London, pp 139–183
- Scollon R (2001b) *Mediated discourse: the nexus of practice*. Routledge, London/New York
- Scollon SW (2003) Political and somatic alignment: habitus, ideology and social practice. In: Weiss G, Wodak R (eds) *Critical discourse analysis: theory and interdisciplinarity*. Palgrave, New York, pp 167–198
- Scollon R, Scollon SW (1995) *Intercultural communication: a discourse approach*. Blackwell, Oxford/Basil

- Scollon R, Scollon SW (2003) Discourses in place: language in the material world. Routledge, London
- Scollon R, Scollon SW (2004) Nexus analysis: discourse and the emerging internet. Routledge, London/New York
- Scollon R, Scollon SW (2007) Nexus analysis: refocusing ethnography on action. *J Socioling* 11 (5):608–625
- Sargeant P, Tagg C (2013) The language of social media : identity and community on the internet. Palgrave Macmillan, Houndsdale/Hampshire
- Thurlow C (2011) Digital discourse: language in the new media. Oxford University Press, Oxford
- Wertsch JV (1985) Vygotsky and the social formation of mind. Harvard University Press, Cambridge, MA
- Wertsch JV (1991) Voices of the mind: a sociocultural approach to mediated action. Harvard University Press, Cambridge, MA
- Wertsch JV (1998) Mind as action. Oxford University Press, New York
- Wohlwend KE, Hansfield LJ (2012) Twinkle, twitter little stars: tensions and flows in interpreting social constructions of the techno-toddler. *Digital Culture & Education* 4(2):185–202
- Zappavigna M (2012) Discourse of Twitter and Social Media: how we use language to create affiliation on the web, Continuum



Ethics of Social Media Research: State of the Debate and Future Challenges

46

Elisabetta Locatelli

Contents

Introduction	836
Ethics of Internet Research	837
Public, Private, Privacy	839
Group Privacy	840
Digital Footprints and Traceability	841
Informed Consent	842
Childhood	844
Anonymization	844
Presence (Researcher in the Field)	846
Institutional Review Board	847
Big Data	848
Tools	849
Storage	850
Data Sharing	851
Crowdsourcing Platforms	851
Conclusions	852
Cross-References	853
References	853

Abstract

Since the late 1990s, researchers have been investigating into the ethical issues of Internet research. Among the first works, AoIR Research Ethics Recommendations of 2002 can be mentioned. Internet research ethics issues are still compelling, especially about social media, that are consolidated fields of research but with ethical open questions that will be more and more complex in the future.

E. Locatelli (✉)
Università Cattolica del Sacro Cuore, Milan, Italy
e-mail: elisabetta.locatelli@unicatt.it

The chapter will go through these questions, focusing on selected keywords and summarizing for each one the debate, holes, and challenges for the future.

The chapter will begin with a definition of the key terms, such as Internet research ethics, social media, and social network sites, as an important step for assessing the ethical issues around social media research. The chapter will then address traditional issues about ethics, like privacy, informed consent, anonymization, Institutional Review Board, and traceability, and then it will focus on new topics, like Big Data, data storage and retrieval, and crowdsourcing work. Besides the specific issues, also broader approaches to privacy will be presented, such as the ones of distributed morality and distributed responsibility, as framework under which build a dialogue between the many actors involved (researchers, companies, users, data, algorithms, programmers).

Keywords

Social media · Ethics · Privacy · Informed consent · Anonymity · Big data · Data sharing · Digital footprint

Introduction

Since the late 1990s, researchers have been investigating into ethical issues of social sciences, humanities, and scientific research carried out on/regarding the Internet. First documents consider research ethics of cyberspace: in 1999 the American Association for the Advancement of Science (AAAS) program on Scientific Freedom, Responsibility and Law organized a workshop about “Ethical and Legal Aspects of Human Subjects Research in Cyberspace” (Frankel and Siang 1999). For a brief history of Internet Research Ethics see Buchanan and Ess 2008). Other reflections are contained in *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS) edited in 2001 (see Canadian Institutes of Health Research 2014) by the Panel on Research Ethics in Canada and in *Ethical Decision-making and Internet Research. Recommendations from the AoIR Ethics Working Committee* edited by the Association of Internet Researchers (AoIR) in 2002 which were updated in 2012 (Ess and the AoIR Ethics Working Committee 2002; Markham and Buchanan 2012) and now are under another review (see Ess 2017).

Internet research ethics issues are still compelling, especially about social media, that are a consolidated field of research with ethical open questions that will be more and more complex in the future because of their constantly changing nature.

The chapter will go through these questions, focusing on selected keywords summarizing for each one the debate, holes, and open challenges for the future. The main field of reference will be social research, but suggestions from other disciplines will be considered. The goal is to provide an overview of the main topics discussed and the principal bibliographical references helpful for students and researchers.

Ethics of Internet Research

Arguing about what is ethics is beyond the scope of this chapter, but it is useful to start with a definition of the subject and of its boundaries, as they emerge from the literature.

According to Buchanan and Zimmer (2016), who reconstruct also a history of Internet research ethics,

The commonly accepted definition of Internet research ethics (IRE) has been used by Buchanan and Ess (2008, 2009), Buchanan (2010), and Ess & Association of Internet Researchers (AoIR) (2002): IRE is defined as the analysis of ethical issues and application of research ethics principles as they pertain to research conducted on and in the Internet. Internet-based research, broadly defined, is research which utilizes the Internet to collect information through an online tool, such as an online survey; studies about how people use the Internet, e.g., through collecting data and/or examining activities in or on any online environments; and/or, uses of online datasets, databases, or repositories. (n.p.)

As Buchanan (2017) pinpoints, this approach “was modeled after traditional principles of research ethics, namely justice, beneficence, and respect for persons (Frankel and Siang 1999)” (Buchanan 2017, p. xxxi). The reflections about the ethical principles of Internet research shifted from an initial approach based principally on qualitative research (involving techniques like participant observation, interviews, ethnographies, etc.) to the era of “social computing and social media” (Buchanan 2017, p. xxxi) and then to the era of Big Data. In this latter age:

Internet research has become so multi-faceted that a congruous definition eludes any particular discipline or methodological approach. And, as for ethics, the discourse of Big Data points to at least four major trends: The rise of large-scale data sets and correspondingly immense processing power available to *some* stakeholder; non-consensual or minimally-consensual access to and sharing of individual data; data-misappropriation; and, different values and ideologies between and among creator, processors, distributors and consumers of data. (Buchanan 2017, pp. xxxii)

The chapter will focus on social media and paraphrasing Buchanan and Zimmer (2016) will refer to social media research as the research that uses social media as a tool for collecting information, that investigates social media users’ behavior, or that uses online datasets.

According to the most known definition, “Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content” (Kaplan and Haenlein 2010, p. 61). McCay-Peet and Quan-Haase (2017) define them as “web-based services that allow individuals, communities, and organizations to collaborate, connect, interact, and build community by enabling them to create, co-create, modify, share, and engage with user-generated content that is easily accessible” (p. 17). The authors propose also a broad classification of social media that include, among the others, Facebook, LinkedIn, Delicious, StumbleUpon, Twitter, Tumblr, LiveJournal, WordPress, YouTube, Flickr, Pinterest, Digg, Reddit,

and Wikipedia (p. 18). Both the definitions place social media inside the web platform and put the accent on their potentiality to make users active producer of contents. They also draw attention to the many subjects involved: technology, platforms, and users.

Although social media and social network sites are often used as synonyms, it is useful to give a definition of social network sites since some features may differ. For example, a blog is a social media, but it doesn't have social networking features. According to the acknowledged definition:

A social network site is a *networked communication platform* in which participants 1) have *uniquely identifiable profiles* that consist of user-supplied content, content provided by other users, and/or system-provided data; 2) *can publicly articulate connections* that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with *streams of user generated content* provided by their connections on the site (italics in original). (Ellison and boyd 2013, p. 157)

During the last years, social media have taken a large part of Internet research, with an ongoing development of themes, methods, and ethical issues (Sloan and Quan-Haase 2017).

Reasonings about ethics of research in this new context not only focused on specific issues (e.g., informed consent, privacy, anonymity, preventing harm toward the involved subjects) but also developed paradigms under which the single aspect can be framed.

Floridi, for example, proposes the approach of “distributed morality” (DM) (Floridi 2013) in which he considers whether “big morally-loaded actions” can “be the result of many, ‘small’ morally-neutral or morally-negligible interactions” (p. 729). In this context, “ICTs are a most influential enabling factor behind the emergence of DM, working as powerful moral enablers” (p. 736). Far from being neutral, enablers are the protagonist of an important part of the system, it is to say “as intra-components of the moral system, metaphorically comparable to the lubricant of the moral machinery. They work at the same level as moral values, neither below nor above them, as integral parts of the dynamic moral system, even if they themselves are not moral values” (p. 740).

Ess proposes the approach of “distributed responsibility” (Ess 2013) in which “the ethical responsibility for a given act is distributed across a network of actors, not simply attached to a single individual” (Ess 2013, p. xii). Consequently, academics share responsibility with other agents in the network, like those who communicate, platforms, and regulatory bodies (Hutchinson et al. 2017).

Both approaches were applied by Hutchinson et al. (2017) to their analysis of the use of social media by the Islamic State, noting that the challenge is to “consider the effective moral agency of any participant and the characteristic power relations of specific network contexts to better understand how otherwise seemingly morally neutral research actions may interact/aggregate with unjust and/or damaging outcomes” (pp. 61–62).

These reflections are a starting point for not considering technology that is a fundamental component of social media, as “neutral” from nor a methodological or ethical point of view (Luka et al. 2017).

Another aspect that the literature investigates is about how research issues are related to the overall research project. One of the main questions addressed is when, during a research project, it is proper to discuss about ethics. For Beaulieu and Estalella, ethical issues are linked strictly with “methodological concerns in social research” (Beaulieu and Estalella 2012, p. 24) and are part of the research process itself, from approaching informants to developing and disseminating the research (Beaulieu and Estalella 2012). Also, Markham and Buchanan (2012) evidenced that “ethical issues may arise and need to be addressed during all steps of the research process, from planning, research conduct, publication, and dissemination” (p. 5).

The ethics of care, that derives from a feminist approach, “argue that ethical concerns have to be taken into account at every stage” (Luka et al. 2017, p. 23). Thus, ethics of care is a “commitment to equity” in research (Luka et al. 2017, p. 23).

Again Pushmann (2017) about Big Data and computational science argues that reflecting about data quality is not only a concern for the methodological setup of the research but also an ethical one. As such, questions that the researchers should answer to are about the source and the context of the data, their functions and scopes, their representativeness and their significance, the process of data interpretation, and their ownership and control (Pushmann 2017).

Public, Private, Privacy

Preventing harm to the subjects involved, protecting their privacy, and balancing between “the social benefits of research and researchers’ rights to conduct research” (Markham and Buchanan 2012, pp. 4–5) are among the acknowledged cornerstones of an ethical approach to Internet and social media research. Buchanan and Zimmer (2016) point out that privacy must be adequately protected by researchers, to prevent harm or risks for the people involved. Discussing about the privacy of the subjects implies also a reflection into the public or private nature of social media.

The debate about the public or private nature of Internet spaces (such as chat, forums, e-mail) has long been established and cannot be summed up here. The discussion has been extended also to social media and social network sites that have very different features and privacy levels. Blogs, for example, are often conceived as tools for self-publishing; platforms like Twitter and Instagram have a binary approach to privacy since they let the users to choose only between a public and private profile; Facebook have a more complex and granular philosophy permitting the users to choose among several levels of privacy. Big Data question further this distinction, been publicly available for many purposes. boyd and Crawford (2012) highlight that when working with large amount of data, it is not always possible to

ask for an informed consent, but the use of the data is not ethical “simply because the data are accessible” (Boyd and Crawford 2012, p. 672).

Establishing the nature of the contents and spaces studied is important to determine other choices, such as the need of informed consent or to anonymize data. Eysenbach and Till (2001) affirm that “to determine whether informed consent is required, you first have to decide whether postings on an internet community are ‘private’ or ‘public’ communications” (p. 1104). They further note that on the Internet the boundaries are not fixed “and people participating in an online discussion group cannot always be assumed to be ‘seeking public visibility’. On the internet the dichotomy of private and public sometimes may not be appropriate, and communities may lie in between” (p. 1104). To solve this tension, they give some advices that can be applied also to social media (e.g., to Facebook groups that let users to build communities within the platform) such as to consider how the access to the community is regulated (i.e., if a subscription is needed), the dimension of the community, and “group’s norms and codes, target audience, and aim” (p. 1104).

Besides the nature of the space, other aspects should be considered, like users’ awareness and expectations that can be ambiguous and changing (Markham and Buchanan 2012). Users, for example, may not be aware of the degree of publicness of the contents they are posting (Giglietto and Rossi 2012) nor the uses they can be subject to (boyd and Crawford 2012). Markham (2012) evidences, additionally, that the distinction between public and private should be more “fine-tuned” and shifted toward the reflection about “the use or flow of information” (Markham 2012, p. 335).

Mukherjee (2017) shows that blogs have been conceptualized both as public and private spaces where personal information is shared, concluding that a viable approach is to adopt “‘a fair-game public domain’ ethical location (Hookway 2008, p. 105)” (p. 209).

Several authors recall the Nissenbaum’s (2010) notion of “contextual integrity” that may lead the researcher to consider the specificity of the contents posted and the specific situation related to the platform used to better understand users’ expectations of privacy and consequently ethical procedures to respect them.

boyd and Crawford (2012) suggest that the issues about privacy and ethics can be dealt with the concept of accountability that is “a multidirectional relationship” toward superiors, colleagues, participants, and to the public that “requires rigorous thinking about the ramifications of Big Data” (boyd and Crawford 2012, p. 673).

Group Privacy

Another way to reflect upon the issue of privacy is the one proposed by Matzner and Ochs (2017) who argue that the traditional ethical practices here discussed (such as informed consent or anonymization) “still retain elements of a bourgeois notion of individuality” (Matzner and Ochs 2017, p. 40). Outlining the “bourgeois legacy of privacy discourse” (p. 40), they show that the traditional debate about privacy is still anchored on the idea of subjectivity and individualism and that media

consumption, in the bourgeois context, is done in solitude, cutting off social relations and getting inwardness and morality. This is opposed to social network in which social networking is the matter that challenges the individualistic approach to privacy. The individualistic notion of privacy does not cover several aspects of social media research ethics. Among them, the practice of informed consent creates an illusion of control and privacy since the subjects involved may not have a full understanding of the consequences of the use of their data, or the researcher cannot estimate all the risks connected with data retrieval, collection, and processing. Again, anonymization cannot be enough since a reverse search may reveal the identity of the subject or of the source. On this basis, Matzner and Ochs (2017) argue what is at stake with data analytics “it is not about personal identification or revealing the essential core of one’s personality, but about sorting people into groups” (p. 47). Thus, they suggest shifting the ethics question:

Rather than asking what will be known about the subject and who might control this knowledge, the ethical question should be: *Will the data allow to enact a subject in a problematic manner?* Thus, researchers [...] should take into account what the context of the research, the researcher’s discipline and personality, the institutional setting, etc. add to this appearance, to the performativity of data – beyond the facts and knowledge derivable from it. (p. 49)

These considerations should not erase but rather complement the “existing provisions to preserve privacy” (p. 50).

A similar approach is affirmed by Zwitter (2014) that highlights that removing personal identifying information from a dataset is:

Just one aspect of anonymization. Location, gender, age, and other information relevant for belongingness to a group and thus valuable for statistical analysis related to the issue of group privacy. Anonymization of data is, thus, a matter of degree of how many and which group attributes remain in the data set. (p. 4)

This issue is particularly relevant for targeting groups in specific situation, like party politics or health campaigns.

Digital Footprints and Traceability

Besides the contents that users voluntarily post on social media, there are the traces they leave during their activities without being aware or that they have forgotten (like cookies, metadata, log-in information, password, sensitive data like telephone number).

Thus, a relevant topic of ethical investigation about social media research is related to digital footprints (Madden et al. 2007) left by informants and their traceability that should be a harm to privacy.

Traceability is “the property of inscriptions to be located on the Internet using search engines, but also through other mechanisms enabled by digital platforms (log

files, user profiles, etc.) (Beaulieu and Estalella 2012, p. 27), and it is strictly connected with “exposure, ownership, authorship” (p. 27).

Digital footprints have been differently conceived. Madden et al. (2007) consider users’ will to leave traces, identifying “active digital footprints” and “passive digital footprints.” The formers are “personal data made accessible online through deliberate posting or sharing of information by the user” (p. 4), while the latter are “personal data made accessible online with no deliberate intervention from an individual” (p. 3).

Garfinkel and Cox (2009) distinguish “public identified footprints” and “private internet footprints” basing on their level of publicness. A public identified footprint is any information created by users “which is online, widely available, and specifically linked to author’s real name” (Garfinkel and Cox 2009, p. 2), while a private one is any information stored online locked with a password, like on cloud computing services (p. 4). Public footprints can also be left by individuals using a pseudonym rather than their real name, like it happens in forums, or by organizations (Garfinkel and Cox 2009).

These categories may overlap, for example, taking into consideration public data not willingly left by users that can be called “public passive internet footprints” (e.g., the metadata associated with posts and videos). Among these there are also data left by users but not linked to a specific author for privacy protection, such as cache, search engine searches, and log files.

Four are the affordances of digital media that make the issues of digital footprints and traceability particularly worth considering in this context:

Persistence: online expressions are automatically recorded and archived.

Replicability: content made out of bits can be duplicated.

Scalability: the potential visibility of content in networked publics is great.

Searchability: content in networked publics can be accessed through search (boyd 2010, p. 46).

Contents and digital traces, thus, persist online and can be aggregated, searched, and shared beyond the original intention of the author. In this frame, among the ethical issues to deal with are data inadvertently retrieved (Livingstone and Locatelli 2012), reidentification (Zimmer 2010), database aggregation (Acquisti and Gross 2009), and group identification (Zwitter 2014).

Informed Consent

One of the first and main issues that have been discussed about Internet and social media research ethics is the need of an informed consent. Back in 1999 Frankel and Siang recognized informed consent is a “vital component of the ethical discourse on

human subjects [...] which recognizes the autonomy of research subjects by sharing with them the power of decision making" (Frankel and Siang 1999, pp. 6–7).

Asking for an informed consent "typically includes the researcher explaining the purpose of the research, the methods being used, the possible outcomes of the research, as well as associated risks or harms that the participants might face" (Buchanan and Zimmer 2016, n.p.), requiring an open communication process between the researcher and the informants.

The issue of informed consent has become more complex in the realm of social media.

In fact, the fluid nature of social media platforms poses several challenges to preserve informants' anonymity, among which the possible change of the nature of the content posted (i.e., from private to public or vice versa), the change of the Terms of Service, and the risks connected with cloud storage. Moreover, working with Big Data "it is often impossible to ask the subject involved to consent to the use of their data" (Giglietto and Rossi 2012, p. 25).

Buchanan and Zimmer highlight that "alignment between a data sharing policy and an informed consent document is imperative. Both should include provisions for appropriate protection of privacy, confidentiality, security, and intellectual property" (2016, n.p.). The authors also provide an overview of ways to obtain informed consent while working online (i.e., through portals accessible to informants) and of issues related to specific topic of research (i.e., health).

The protection of the subjects involved, as already shown in the previous paragraph, stretches from the beginning of the data collection to their dissemination. When the data collected become part of a research article, they may be archived and reproduced irrespective of the authors' will (Highfield and Leaver 2016). This may involve building an ongoing dialogue with the informants during the entire research project (Robson 2017).

A further area of investigation of informed consent and ethical use of data is about the research that social media corporations do with their data. The emblematic and most discussed case is the one of Facebook emotional contagion (Kramer et al. 2014; boyd 2016; Flick 2016) developed altering the Facebook news feed of a sample of Facebook users in order to understand the variables of emotional contagion. As Inder M. Verna, Editor in Chief of Proceedings of the National Academy of Sciences that published the research, evidences, although ethical concerns were raised about the experiment, "as a private company Facebook was under no obligation to conform to the provisions of the Common Rule when it collected the data used by the authors, and the Common Rule does not preclude their use of the data" (Kramer et al. 2014, Editorial Expression of Concern and Correction). Moreover, the use of data was consistent with Facebook Data Use Policy, and the consent given by users when creating the account was enough to use the data. As Verna concludes "it is nevertheless a matter of concern that the collection of the data by Facebook may have involved practices that were not fully consistent with the principles of obtaining informed consent and allowing participants to opt out" (Kramer et al. 2014, Editorial Expression of Concern and Correction). About this case, boyd argues that academic and corporate researchers should integrate ethics in their decisions and that for

addressing such cases “a socio-technical model of ethical oversight” should be created together by companies and researchers (boyd 2016, p. 12).

Childhood

A particular attention to ethical aspects should be paid when research involve children.

Research about children and the Internet has grown rapidly during the recent years, and summarizing the main research issues is beyond the scope of this paragraph. Among the main topics explored about researching on youth online are the involvement of secondary subjects (e.g., Facebook friends interacting on the wall of the informant), of children whose parents that didn’t give informed consent but that would be problematic to exclude from the whole research project, and of unintended data collection (e.g., metadata about geolocalization), traceability, and privacy (Livingstone and Locatelli 2012).

The Innocenti Working Paper (Berman and Albright 2017) provides a rich overview of the ethical issues in which children are involved in the age of Big Data. The report evidences that it is difficult to face “unknown future applications of the data,” children’s and parents’ understanding of the implications of the use of data, and the “insufficiency of traditional informed consent and assent processes” (p. 10). Other risks may come from the accumulation and persistence of data that now start in the very beginning of life. Thus “there is a need to explicitly require increased transparency, accountability with explicit identification of the risks, the harms and the benefits associated with big data use” (p. 29).

A delicate theme that emerged during the last years and that should be object of further investigation is the presence of traces related to the “ends of identity” (Leaver 2015), it is to say birth and death. As Leaver (2015) notices, “a social media presence often begins before birth” (p. 1), for example, when parents share fetal ultrasound images, pregnancy and baby bump images, or baby’ routines in the early days of his or her existence or when mothers share breastfeeding images (Locatelli 2017). “Yet, while early uses of the Internet by young people have been the focus of scholarship for some years (see, e.g., Livingstone 2009), research about the way parents and other create or publish children into being online is largely absent” (Leaver 2015, p. 1). Digital death has been more studied, but the social media spaces devoted to memory or working-through of a bereavement pose several ethical challenges about the nature of the space and how the digital traces of the dead can be treated (Hård af Segerstad et al. 2017).

Anonymization

One of the most used strategies to reduce harm and preserve the privacy of the subjects involved is the anonymization of sensitive data (i.e., name, date of birth, residence). Social media challenge this consolidated practice because a simple reverse

search could make possible the reidentification of the author of a post, compromising all the ethical cautions taken by the researcher. Moreover, Robson (2017) shows that even when data about informants are anonymized, there is the possibility to discover the community or the subjects involved if, for example, the researcher has used his or her real name when accessing the community for the research.

As Hård af Segerstad et al. (2017) note, “anonymization is always a trade-off between the comprehensiveness of anonymization and the integrity of the research quality” (p. 217). Viable strategies that the authors suggest about studying Facebook closed groups of bereaved parents include generalization and aggregation of the data or storing them in safe places when only researchers can access them. Since complete anonymization could make the data useless, they also suggest using the “rule of thumb” of “data minimization,” it is to say retrieving only “the data needed to pursue a specific research question” (Hård af Segerstad et al. 2017, p. 220) and to employ encryption technologies “that replace identifying information with cryptographic signatures, thus preserving data consistency” (p. 220).

Several are the strategies enacted by researchers to create this “conscious middle ground” (Mukherjee 2017), for example, paraphrasing blog posts ensuring that the original meaning was not obscured, removing hyperlinks, and altering original names and original URL (Mukherjee 2017).

Some researchers propose to follow a fabrication approach to solve this issue (Markham 2012). Here fabrication is not intended as synonymous of falsification or research misconduct, but rather as a methodological framework, as a “rigorous model for analysis and representation [that] involves reconsidering the relationship between the researcher, the participant and the construction of cultural knowledge” (Markham 2012, p. 341). The approach is proposed as convenient when the subjects studied are involved in risky or illegal situations (i.e., violence, drug abuse, suicide, anorexia, extreme behavior involving youth). The fabrication techniques comprehend composite accounts, built “selecting representative elements from the data set and composing a new original that is not traceable back to the originals” (p. 342), similarly to what anthropologists do, and fictional narratives. All these accounts should always relate to the research fields, and the researchers “must take seriously the role of cultural interpreter, and gain interpretive authority through rigorous and constant practice of their craft” (p. 348).

Other researchers, reflecting about the ethical challenges posed by the study of youth in digital media, propose other strategies that preserve the richness of data, such as discarding data about which no informed consent was obtained, excluding data inadvertently recorded or about secondary participants (i.e., informants’ Facebook friends), and informing participants of the characteristics of the platforms used during the research (Livingstone and Locatelli 2012).

Another way to consider this issue is also to reflect upon when the context requires to cite and to make recognizable the subjects studied. Back in 2002 Bruckman examined the nature of studying human subjects in humanities and especially the case of artists and amateur artists. Her reflections are extremely relevant since on social media several users upload and share their own digital creations (e.g., on YouTube or Instagram). In these cases, she argues, they “deserve

credit for their creative work” (p. 229), and so pseudonyms and real names can be used although omitting details “that would be harmful to the subject if revealed” (p. 229).

Big Data pose new questions about the relation between privacy protection and anonymization. Arguing about the privacy violations of the “Tastes, Ties, and Time” research project, Zimmer (2010) identifies four “salient dimensions of privacy violation,” it is to say, “the amount of personal information collected, improper access to personal information, unauthorized secondary use of personal information, and errors in personal information” (p. 322). The amount of personal information collected is related to the quality and quantity of data gathered by the researchers; the second dimension is connected to the type of access that researchers have to the data, for example, being part of a community; the third one refers to the concern about the fact that “information collected from individuals for one purpose might be used for another secondary purpose without authorization from the individual, thus the subject loses control over their information” (p. 322). The last dimension comprehends the “impact of possible errors within datasets” (p. 322). In some cases, anonymizing the dataset by removing personal identifying information is not enough since what is meant as identifying information can vary from context to context (e.g., European Union law has a broader stance about them if compared to the one of the USA). Moreover, sometimes it is possible to identify a person even if, apparently, all the sensitive data are removed from the dataset, comparing the data available with other sources (Zimmer 2010). Buchanan and Zimmer (2016) cite cases in which the subjects were reidentified comparing and combining different public datasets and argue that relying only on the legal definition of what is a personal information may not be enough to protect really the privacy of the subjects involved. Hence, “merely stripping traditional ‘identifiable’ information such as a subject’s name, address, or social security number is no longer sufficient to ensure data remains anonymous (Ohm 2009), and requires the reconsideration of what is considered ‘personally identifiable information’ (Schwartz and Solove 2011)” (Buchanan and Zimmer 2016, n.p.).

Presence (Researcher in the Field)

Especially qualitative enquiries of social media like ethnographies or participant observations evidenced the issue of how to manage the presence of the researcher into the field and the related ethical issues. This theme is strictly connected to the nature and scope of the space or platform analyzed, the perceived privacy of the subjects, the need of an informed consent, and risks and benefits of the research.

Several are the nuanced ways in which researchers can approach the field.

One of the most known approaches is to do “covert” observation or “lurking” (Ess and the AoIR ethics working committee 2002). Among the invoked benefits of lurking are the possibility to enter the field in an unobtrusive way, to protect researcher’s privacy, and to preserve the integrity of the research group and the comfort of the subjects studied (Beaulieu 2004). There are also limitations of this

approach, it is to say a restricted view on the phenomenon or the impossibility to check accounts (Beaulieu 2004) and also the transparency of the research project may be in question (Eysenbach and Till 2001).

Other forms of presence are the one of participant observation (Beaulieu and Estalella 2012), for example, creating an account on the group studied limiting the participation to disclosing the presence of the researcher in the field. Other researchers may also choose to participate in the group activities and to use the online space to interact with the participants (Beaulieu 2004). Both can be done using a pseudonym or a real name. Robson (2017) shows that also using a real name for transparency toward group participant, that should be a form of ethical participation into the group, may lead to a threat for the privacy of the subjects involved since searching on the Internet for the name of the researcher may conduct people to the group studied, thus breaking the anonymization process.

Opening a blog devoted to research in some cases can be a way to make the research project accountable (Beaulieu and Estalella 2012). This choice may raise other ethical issues such as the anonymization of participants and of quotations (that could be reverse searched) and a tension between field and analysis (Beaulieu and Estalella 2012). Other researchers evidence that also researcher's privacy is at stake when he or she decides to share his or her identity and some personal information to make the research project more transparent (Livingstone and Locatelli 2012).

This reflection is still open since more and more researchers have public or private social media profiles that sometimes are used to access the data, for example, from Facebook that requires a log-in to see and retrieve data (Zimmer 2010).

Institutional Review Board

The Institutional Review Boards (IRB) in the USA, Research Ethics Boards (REB) in Canada, and Human Research Ethics Committees (HRECs) in other countries such as Australia (Buchanan and Zimmer 2016) are the institutional subjects entitled to evaluate how the researchers deal with ethical issues addressed in their research projects when involving human subjects (Whiteman 2012; Seko and Lewis 2017).

The role of such institutions varies from country to country, and in many countries their approval is not required for social sciences and humanities researches. However, a discussion about their role will be crucial to establish ethical guidelines (Whiteman 2012).

Walther (2002) critiques the identification tout court of Internet research as a human subject research arguing, for example, that “if the records are not linked by *the researcher* (italics original) to the subject, it also fails to be human subject research” (p. 207). This does means that “researchers must make their own individual ethics decision” but not necessarily their project has to be approved by an IRB.

Whiteman (2012) pinpoints that the inclusion of social sciences among the disciplines subject to the approval of an Institutional Review Board changed “the visibility of social science research ethics. What was, previously, primarily a personal endeavor (for the social science researcher to contend with) has been brought

into a more public domain, documented, regulated and approved by those operating within the institutional frameworks” (p. 6). Researchers are required to show the legitimacy of their work and to ask for the approval of the IRB, when present in their institution, before the start of the research.

Already in 2012 Beaulieu and Estalella have highlighted that the role of IRB is important but that “ethical issues arise beyond what formal framework can legislate” (p. 25). The ever-changing nature of social media challenges also the knowledge and the role of IRBs that in the last years developed also guidelines for evaluating Internet research (for an overview of the main documents, see Buchanan and Zimmer 2016).

Seko and Lewis (2017) investigated how Canadian REBs face the ethical challenges of social media research. Their work shows that the challenges described in this chapter (risk/benefit of the research, boundaries between public and private, anonymization, data security) challenge also the members of REBs. They are required to keep up with the speed of technological development and not always have the expertise needed to evaluate all the single cases; thus they often choose to “err on the side of caution” (p. 143). Seko and Lewis suggest that there is the risk that the institutional step may become a bureaucratic stage that causes delays and confusion in the research project. To avoid this risk, they suggest strict “collaborations between researchers and ethics reviewers [...] to mutually advance their understandings of unique characteristics of online approaches and unique ethical issues pertinent to such methodology” (p. 145). This may lead also to call into the review process experts for ad hoc reviews, but also proper training is needed. They also propose to go beyond conducting the ethical assessment only at the beginning of the research but to do it throughout all the research process.

Big Data

Big Data is one of the buzzwords of contemporary research about social media.

boyd and Crawford in their foundational paper (2012) define them as “a cultural, technological, and scholarly phenomenon” (p. 663) that rests on the interaction between technology, analysis, and mythology. Kitchin (2017) resumes the main characteristics of Big Data as they emerge from the debate: huge in volume, high in velocity, diverse in variety, exhaustive in scope, fine-grained in resolution, relational in nature and flexible.

Big Data not only offer a new type of data but also change the way research is conceived and done, raising many critical issues such as objectivity, sampling, cleaning and analysis process, contextualization, and accessibility (boyd and Crawford 2012; Sloan and Quan-Haase 2017).

The fact that they are big does not automatically mean, for example, that they are complete, representative, or accurate. Social network sites like Twitter or Instagram allow the retrieval of a huge number of data, but it must be considered that each dataset has “limitation and bias” (boyd and Crawford 2012) in order not to misinterpret the result. Accuracy is not a matter related only with methodology, but also

with the research integrity and responsibility toward the scientific community about the data analyzed (Pushmann 2017). Zwitter (2014) pinpoints that “there are three categories of Big Data stakeholders: Big Data collectors, Big Data utilizers, and Big Data generators” (p. 3) among which there are different power relations.

One of the key ethical challenges about Big Data concerns privacy. The tension here is between the fact that Big Data are large public dataset easily accessible for researchers and the fact that data may be publicly used (and so published, distributed) for research. Several ethical issues are here involved: data anonymization (boyd and Crawford 2012; Zimmer 2010), the status of data (public or private), users’ awareness of the possible uses of their data, matching datasets compromising privacy (Acquisti and Gross 2009), and informed consent. Sloan and Quan-Haase (2017) evidence that it is, for example, problematic to anonymize Twitter data because the platform requires to reproduce Twitter handle together with the content. Zwitter (2017) pinpoints, instead, that the debate about privacy should be shifted to reason about group privacy and the use of data for group targeting.

The use of Big Data in public health is particularly challenging because both benefits and risks are at stake. Vayena et al. (2015) explore the ethical concerns about the new technique of digital disease detection (DDD) that may bring “great social benefits” but also “potential risks and unintended consequences” (p. 1). Context sensitivity, nexus of ethics and methodology, and legitimacy requirements are recognized as three areas of ethical issue to be addressed to realize the great potentiality that this new detection system may have for public health.

Zook et al. (2017) developed a set of ten rules about the responsible use of Big Data among which there is the acknowledgment that data may impact people and do harm, recognize that privacy is “contextual and situational, not reducible to a simple public/private binary” (p. 3), work to avoid reidentification, create a debate among professionals and disciplines, create a code for the organization or industry, and be auditable.

Tools

The retrieval of social media data often involves the use of tools that may have bias or features influencing the kind of data obtained also from an ethical point of view.

API is one of the most common ways to retrieve data from social media like Facebook or Twitter (Thomson 2016). API is the acronym of application programming interface, and it is a software that “acts as an interface between the social media platform and a consumer of social media data. The API defines how the consumer can interact with the platform in technical terms, and may define rules and restrictions on the access provided” (Thomson 2016, p. 9). Understanding the conditions under which the API retrieves data is not only a methodological but also an ethical issue (Pushmann 2017). For example, the Twitter API provides the access to 1% of the tweets related to the search done; “however Twitter does not disclose how the 1% sample is selected, preventing researchers from verifying if the data contains bias” (Thomson 2016, p. 11). To access the 100% of tweets related to a specific search, the

researcher must purchase data from official resellers (such as GNIP), a fact that may pose problems about the equal access to data by researchers (Weller and Kinder-Kurlanda 2017). Sloan and Quan-Haase (2017) pinpoint that since researchers have demonstrated that Big Data sets are not representative, the ethical dilemma is if “the absence of certain groups from social media violates ethical principles of inclusivity” (p. 665).

Storage

Many of the studies cited along this chapter evidenced the need of a reflection about ethical implications during the entire research project, including the storage of data. Researchers manage data that have qualitatively different formats (posts, texts, pictures, videos, snapshots, interviews, etc.) but also quantitative different dimensions (e.g., terabytes of data coming from API retrieval).

Especially about computational and data science, the huge amount of data collected through social media required adequate structures to host and manage them. One of the viable solutions is offered by cloud computing services that permit researchers to save costs and have an adequate hosting space (De Bruin and Floridi 2017). De Bruin and Floridi (2017) reflect upon the ethical issues involved in cloud computing and especially related to the epistemic attitude that the clouder (that can be a researcher or an institution) should have toward cloud computing. They suggest the clouders to expand the knowledge about the conditions of cloud computing use and to develop epistemic virtues like intellectual impartiality, intellectual sobriety, and intellectual courage (de Bruin and Floridi 2017, pp. 29–30) that let them to seek all the information needed. On the other side, cloud computing services should develop an “interlucent communication” (de Bruin and Floridi 2017, p. 30); it is to say “interlucent agents make sure to adapt the provision of information to the audience they want to reach, and they actively track whether their audience is understanding them” (p. 30). Cloud computing services should tailor their communication to the audience and track if it has been understood instead of creating Terms of Service which are complex and difficult to read. An important point to be debated is if also research data are as sensitive (as, e.g., lawyer and medical data) and cannot be stored in a cloud computing service or if it is possible to do so at certain conditions and warranties about data protection (De Bruin and Floridi 2017).

Terms of Service of the platforms investigated are another aspect that researchers should consider (Thomson 2016) since they may prohibit the storage of data in cloud services.

However complex, as Thomson (2016) evidences, preserving social media contents is a key challenge for institutions such as universities or libraries, but “how the extent to which collecting institutions will be responsible for these issues of privacy and consent is yet to be established” (p. 20). Many are the challenges faced, such as making the archive searchable, protecting individuals’ privacy, accomplishing platforms’ Terms of Service that may change during time, keeping together the conversations that occur as opposed to posts or fragments that may be unintelligible

without their context, and preserving also user experience that make meaningful the data archived (Thomson 2016).

Data Sharing

More and more research funders require data to be public (Weller and Kinder-Kurlanda 2017), promoting an open research framework. This poses new and open ethical challenges. On the one side, sharing can make research more “transparent and reproducible” (p. 116) and may “help to alleviate the inequalities in data access” (p. 120). On the other side, there is the “desire to protect research subjects” (p. 122), for example, preventing that retrieved data are combined with others causing harm or revealing information not intended by the researchers and the worries about legal constraints derived from platforms’ Terms of Service. As Weller and Kinder-Kurlanda conclude, this is a theme that has not been yet clearly developed, and it is associated with a high sense of insecurity. Besides the gray market of private data sharing, new forms of sharing are emerging, such as the one carried on by archival institutions that “can help to secure long-term accessibility of the data, can support researchers in providing documentation alongside with the actual datasets, and may also provide guidance in legal questions” (p. 127). There is also a need, the two authors conclude, to “secure sharing solutions for social media data” that “could also foster the emergence of sharing guidelines and best practice recommendations” (p. 128).

Another important ethical dilemma is raised about the use of hacked data, like the one diffused about the dating website OkCupid (Weller and Kinder-Kurlanda 2017; Zook et al. 2017) or the crowdfunding platform Patreon (Poor and Davidson 2018). Although journalists, for example, may use hacked data, academics should follow different standards. The issue is still open. The approach described by Poor and Davidson (2018) chooses, for example, to protect users’ privacy not opening the hacked database nor using its data although, having been hacked, the data were somehow public.

Crowdsourcing Platforms

There are many ethical challenges that social media are opening.

The use of crowdsourcing platforms such as Amazon’s Mechanical Turk is one of the newest. For sociological research done with Mechanical Turk, Shank (2016) suggests to evaluate the same ethics issues that should be evaluated in other contexts, like informed consent, anonymity and to compensate appropriately the workers. As Pittman and Sheehan note (2017), it is a way “for quick data collection at a low cost” (p. 178). The researchers apply the ethical reflection about “trust, accountability, mutual respect, and fairness” (p. 179) to the use of this kind of labor inside an academic research project. They analyze the risks related to workers’ exploitation, such as low wages, partial work, and lack of transparency arguing that “MTurk

creates an unbalanced relationship between Amazon, Requesters and Workers that is unfair to Workers" (p. 181). In the light to extend the ethical reflection to all the research process, Pittman and Sheehan suggest that all the stakeholders involved in the process have the responsibility to cooperate to make the MTurk "an ethical platform for data collection" (p. 184), from researchers to ethics review board to Amazon itself.

Conclusions

The chapter provided an overview of the main ethical issues about social media research. It offered an outline of the rich debate about how the traditional ethical issues about Internet research are challenged by social media and summarized the main challenges for the future.

Social media research shows that the traditional issues of ethics, such as informed consent, privacy, and harm reduction, are still valid topics to reflect upon. The distinction between public and private emerged not as binary but as blurred and nuanced, related to the features of the space studied but also to users' individual perception and awareness. New approaches to privacy conceptualization also emerged, like group privacy. The tension between the presence of a large amount of data and the several layers of privacy makes ethical choices to be waived contextually according to the topic, the methodology, and the scopes of the research project.

The issue of informed consent is magnified since, on the one side, researchers evidenced the need to build a dialogue with the subjects involved in order to be sure that they comprehend the different stages of research, especially when qualitative methodologies are used; on the other side, they also pointed out that it is difficult to obtain informed consent when working with Big Data.

A new area of investigation is the gray area of social media corporations' research with their own data. They are formally allowed to do it because of users' subscription of the Terms of Service, but it leaves open many areas of ethical reflection such as informed consent and opt-out possibility.

About anonymization new concerns emerged, such as reidentification and dataset merging, but also new techniques for protecting sensitive data while preserving data consistency were suggested, like data encryption.

Big Data raised also new ethical issues to be further discussed such as the use of tools and algorithms for retrieving data, data storage, and data sharing.

Social media revealed to be a complex field because of the number of the stakeholders involved that comprehend academics, researchers, social media corporations, and regulatory bodies such as IRBs. The latter are challenged by the features of social media and are required to keep up with the changes.

In this light, as many authors emphasize, ethical issues are not limited to a bureaucratic procedure or to a single stage of the research, but extend from the very beginning of the project to its dissemination. The empirical cases and the conceptual debate strongly suggest that the actors involved (researchers, platforms,

users, data providers, etc.) are connected, sharing also the responsibility of the ethical choices.

Thus, a dialogical approach within the scientific community but also between academy and industry, social media corporations, and regulatory bodies is more and more compelling to create common guidelines and standards.

Cross-References

- [Big Captcha?](#)
 - [Big Data Approaches to the Study of Digital Media](#)
 - [Big Social Data Approaches in Internet Studies: The Case of Twitter](#)
 - [Blended Data: Critiquing and Complementing Social Media Datasets, Big and Small](#)
 - [How to Compare Different Social Media: A Conceptual and Technical Framework](#)
-

References

- Acquisti A, Gross R (2009) Predicting social security numbers from public data. *Proc Natl Acad Sci* 106(27):10975–10980. <https://doi.org/10.1073/pnas.0904891106>
- Beaulieu A (2004) Mediating ethnography: objectivity and the making of ethnographies of the internet. *Soc Epistemol* 18(2–3):139–163. <https://doi.org/10.1080/0269172042000249264>
- Beaulieu A, Estalella A (2012) Rethinking research ethics for mediated settings. *Inf Commun Soc* 15(1):23–42
- Berman G, Albright K (2017) Children and the data cycle: rights and ethics in a big data world. In: Innocenti working paper 2017-05. UNICEF Office of Research, Florence
- boyd d (2010) Social network sites as networked publics: affordances, dynamics, and implications. In: Papacharissi Z (ed) Networked self: identity, community, and culture on social network sites. Routledge, New York, pp 39–58
- boyd d (2016) Untangling research and practice: What Facebook's "emotional contagion" study teaches us. *Research Ethics*. Vol. 12(1):4–13
- boyd d, Crawford K (2012) Critical questions for big data. *Inf Commun Soc* 15(5):662–679
- Bruckman A (2002) Studying the amateur artist: a perspective on disguising data collected in human subjects research on the internet. *Ethics Inf Technol* 4(3):217–231
- Buchanan E (2010) Internet research ethics: past, present, future. In: C. Ess and M. Consalvo, (eds) *The Blackwell Handbook of Internet Studies*, Oxford: Oxford University Press, pp 83–108
- Buchanan E (2017) Internet research ethics. Twenty years later. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts*. Peter Lang, New York, pp xxix–xxxiii
- Buchanan EA, Ess C (2008) Internet research ethics: the field and its critical issues. In: H. Tavani and K. E. Himma (eds) *The Handbook of Information and Computer Ethics*, Boston: Wiley, pp 273–292
- Buchanan EA, Ess C (2009) Internet research ethics and the institutional review board: current practices and issues. *Comput Soc* 39(3):43–49
- Buchanan EA, Zimmer M (2016) Internet Research Ethics. In: Zalta EN (ed) *The Stanford encyclopedia of philosophy* (Winter 2016 edn). <https://plato.stanford.edu/archives/win2016/entries/ethics-internet-research/>. Accessed 26 Oct 2017

- Canadian Institutes of Health Research (2014) Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, December 2014. http://www.pre.ethics.gc.ca/pdf/eng/tcps2-2014/TCPS_2_FINAL_Web.pdf. Accessed 22 July 2018
- De Bruin B, Floridi L (2017) The ethics of cloud computing. *Sci Eng Ethics* 23:21–39. <https://doi.org/10.1007/s11948-016-9759-0>.
- Ellison NB, boyd d (2013) Sociality through social network sites. In: Dutton WH (ed) *The Oxford handbook of internet studies*. Oxford University Press, Oxford, pp 151–172. <https://doi.org/10.1093/oxfordhb/9780199589074.013.0008>
- Ess C (2013) Digital media ethics, 2nd edn. Polity Press, Cambridge
- Ess C (2017) Foreword. *Grounding internet research ethics 3.0: a view from (the) AoIR*. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts*. Peter Lang, New York, pp ix–xv
- Ess C, the AOIR Ethics Working Committee (2002) Ethical decision-making and internet research: recommendations from the AoIR ethics working committee. Available: www.aoir.org/reports/electrics.pdf. Accessed 10 Oct 2017
- Eysenbach G, Till JE (2001) Ethical issues in qualitative research on internet communities. *BMJ* 323(7321):1103–1105. <https://doi.org/10.1136/bmj.323.7321.1103>
- Flick C (2016) Informed consent and the Facebook emotional manipulation study. *Res Ethics* 12(1):14–28
- Floridi L (2013) Distributed morality in an information society. *Sci Eng Ethics* 19:727–743. <https://doi.org/10.1007/s11948-012-9413-4>
- Frankel MS, Siang S (1999) Ethical and legal aspects of human subjects research in cyberspace. Report of the workshop held in Washington, DC on June 10–11, 1999. Retrieved from <http://www.aaas.org/spp/sfrl/projects/intres/report.pdf>. Accessed 26 Oct 2017
- Garfinkel S, Cox D (2009) Finding and archiving the internet footprint. In: Paper, presented at the first digital lives research conference: personal digital archives for the 21st century, London, 9–11 Feb 2009
- Giglietto F, Rossi L (2012) Ethics and interdisciplinarity in computational social science. *Methodol Innov* 7(1):25–36. <https://doi.org/10.4256/mio.2012.003>
- Hård af Segerstad Y, Kasperowski D, Kleinberg C, Howes C (2017) Studying closed communities on-line. Digital methods and ethical considerations beyond informed consent and anonymity. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts*. Peter Lang, New York, pp 213–225
- Highfield T, Leaver T (2016) Instagrammatics and digital methods: studying visual social media, from selfies and GIFs to memes and emoji. *Commun Res Pract* 2:47–62. <https://doi.org/10.1080/22041451.2016.1155332>
- Hookway N (2008) Entering the blogosphere: Some strategies for using blogs in social research. *Qual Res* 8(1):91–113. <https://doi.org/10.1177/1468794107085298>
- Hutchinson J, Martin F, Sinpeng M (2017) Chasing ISIS. Network power, distributed ethics and responsible social media research. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts*. Peter Lang, New York, pp 58–71
- Kaplan A, Haenlein M (2010) Users of the world unite: the challenges and opportunities of social media. *Bus Horizons* 53(1):59–68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Kitchin R (2017) Big data – hype or revolution? In: Sloan L, Quan-Haase A (eds) *The SAGE handbook of social media research methods*. Sage/Credo Reference, Los Angeles, pp 27–39
- Kramer ADI, Guillory JE, Hancock JT (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proc Natl Acad Sci* 111(24):8788–8790. <https://doi.org/10.1073/pnas.1320040111>
- Leaver T (2015) Researching the ends of identity: birth and death on social media. *Social Media + Society* 1(1):205630511557887. <https://doi.org/10.1177/2056305115578877>
- Livingstone S, Locatelli E (2012) Ethical dilemmas in qualitative research with youth on/offline. *Int J Learn Med* 4:67–75. https://doi.org/10.1162/ijlm_a_00096

- Locatelli E (2017) Images of breastfeeding on Instagram: self-representation, publicness, and privacy management. *Social Media + Society* 3(2):205630511770719. <https://doi.org/10.1177/2056305117707190>
- Luka ME, Millette M, Wallace J (2017) A feminist perspective on ethical digital methods. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 22–36
- Madden M, Fox S, Smith A, Vitak J (2007) Online identity and management and search in the age of transparency. Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/~media/Files/Reports/2007/PIP_Digital_Footprints.pdf.pdf. Accessed 10 Oct 2017
- Markham AN (2012) Fabrication as ethical practice: qualitative inquiry in ambiguous internet contexts. *Inf Commun Soc* 15(3):334–353
- Markham A, Buchanan E (2012) Ethical decision-making and internet research recommendations from the AoIR ethics working committee (Version 2.0). Retrieved from <http://aoir.org/reports/ethics2.pdf>. Accessed 10 Oct 2017
- Matzner T, Ochs C (2017) Sorting things out ethically. Privacy as a research issue beyond the individual. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 40–52
- McCay-Peet L, Quan-Haase A (2017) What is social media and what questions can social media research help us answer? In: Sloan L, Quan-Haase A (eds) *The SAGE handbook of social media research methods.* Sage/Credo Reference, Los Angeles, pp 13–26
- Mukherjee I (2017) The social age of “It’s not a private problem”. Case study of ethical and privacy concerns in a digital ethnography of south Asian blogs against intimate partner violence. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 203–212
- Nissenbaum H (2010) *Privacy in context: technology, policy, and the integrity of social life.* Stanford University Press, Stanford
- Pittman M, Sheean K (2017) Ethics of using online commercial crowdsourcing sites for academic research. The case of Amazon’s Mechanical Turk. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 177–184
- Poor N, Davidson R (2018) Case Study: The Ethics of Using Hacked Data: Patreon’s Data Hack and Academic Data Standards. Council for Big Data, Ethics, and Society. Accessed July 22, 2018. <https://bdes.datasociety.net/council-output/case-study-the-ethics-of-using-hacked-data-patreons-data-hack-and-academic-data-standards/>
- Pushmann C (2017) Bad judgement, bad ethics? Validity in computational social media research. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 96–113
- Robson J (2017) Participant anonymity and participant observation. Situating the researcher within digital ethnography. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 196–201
- Seko Y, Lewis SP (2017) “We tend to err on the side of caution”. Ethical challenges facing Canadian research ethics boards when overseeing internet research. In: Zimmer M, Kinder-Kurlanda K (eds) *Internet research ethics for the social age. New challenges, cases, and contexts.* Peter Lang, New York, pp 133–147
- Shank DB (2016) Using crowdsourcing websites for sociological research: the case of amazon mechanical turk. *Am Sociol* 47(1):47–55
- Sloan L, Quan-Haase A (2017) A retrospective on state of the art social media research methods: ethical decisions, big-small data rivalries and the spectre of the 6Vs. In: Sloan L, Quan-Haase A (eds) *The SAGE handbook of social media research methods.* Sage/Credo Reference, Los Angeles, pp 662–672
- Thomson SD (2016) Preserving Social Media. DPC Technology watch report 16-01 February 2016. <https://doi.org/10.7207/twr16-01>

- Vayena E, Salathé M, Madoff I C, Brownstein JS (2015) Ethical challenges of big data in public health. *PLoS Comput Biol* 11(2):e1003904. <https://doi.org/10.1371/journal.pcbi.1003904>
- Walther JB (2002) Research ethics in internet-enabled research: human subjects issues and methodological myopia. *Ethics Inf Technol* 4:205–216
- Weller K, Kinder-Kurlanda K (2017) To share or not to share? Ethical challenges in sharing social media-based research. In: Zimmer M, Kinder-Kurlanda K (eds) Internet research ethics for the social age. New challenges, cases, and contexts. Peter Lang, New York, pp 115–129
- Whiteman N (2012) Undoing ethics. Rethinking practice in online research. Springer, New York
- Zimmer M (2010) “But the data is already public”: on the ethics of research in Facebook. *Ethics Inf Technol* 12:313–325. <https://doi.org/10.1007/s10676-010-9227-5>
- Zook M, Baracas S, boyd d, Crawford K, Keller E, Gangadharan SP, Goodman A, Hollander R, Koenig BA, Metcalf J, Narayanan J, Nelson A, Pasquale F (2017) Ten simple rules for responsible big data research. *PLoS Comput Biol* 13(3):e1005399. <https://doi.org/10.1371/journal.pcbi.1005399>
- Zwitter A (2014) Big data ethics. *Big Data Soc* 1:1–6



Deep Data: Analyzing Power and Influence in Social Media Networks

47

Fiona Martin and Jonathon Hutchinson

Contents

Introduction	858
History and Concepts	860
Actors, Agency, and Context	862
Rights, Responsibilities, and Ethics	865
Political Economics	867
Broader Sociological Research	868
Methods, Tools, and Practices	870
Looking Ahead	873
References	874

Abstract

Social media network analysis (SMNA) is an interdisciplinary Internet studies methodology which uses computational methods to track, map, and analyze the conduct of social relationships on social networking and social media platforms. Increasingly SMNA is being used to explore the nature of online sociality and to address questions about communicative power and influence. This chapter explores SMNA's history, principles, and epistemological foundations, uses, and analytical methods, with a critical focus on the dimensions of researchers' access to, interpretation, and governance of social media datasets. Each section explores methodological problems that arise during the capture, filtering, interpretation, and representation of real-time data flows in transnational, commercialized social media streams. Centrally the chapter interrogates and explores how researchers can derive deeper, better culturally informed information from big data flows.

F. Martin (✉) · J. Hutchinson (✉)

Department of Media and Communications, University of Sydney, Camperdown, NSW, Australia
e-mail: fiona.martin@sydney.edu.au; jonathon.hutchinson@sydney.edu.au

Keywords

Social media · Social network analysis · Sociometrics · Big data · Network influence

Introduction

Social media network analysis (SMNA) is a burgeoning interdisciplinary research agenda in Internet studies, which draws on computational technologies to help identify, aggregate, visualize, and interpret people's social networking and social media data traces. The premise is that by using algorithmic methods of tracking and analyzing social relations, we will be able to reveal otherwise hidden patterns in this data that will illuminate the nature of people's lives and behaviors. To this end SMNA researchers tend to capture large datasets of user profiles, messages, and metadata, refining, graphing, and analyzing the connections and activities these represents. But like other big data methodologies, the devil really is in the detail – of how the data is collected, processed, and interpreted and the partiality of the social dynamics it can capture.

Beyond a thick description of the data context and network relations, rigorous SMNA provides deep analysis of social media networks, accounting for the politics of platform enclosure, the shaping of actor interactions, and the ethics of research interventions. To address this complexity, SMNA projects will ideally draw on the collaborative expertise of researchers from computing and information science, social sciences, communications, and media studies and with a commitment to qualitative as well as quantitative approaches.

Building on earlier sociometric and social anthropology-based techniques of network analysis (Jupp 2006; Scott 2012, 2017), SMNA can be used to chart the presence and communicative influence of diverse users in a social media network and to investigate the strength and extent of social ties between users, aspects of group formation and evolution, shared social attributes, and information sharing behaviors (such as message initiation and diffusion). Since its inception in the late 2000s, SMNA has attracted increasing interest in political science, business, and strategic communications (Himelboim et al. 2009, 2013; Brath and Jonker 2015). Political scientists, for example, use it to identify the key communicators and influencers in political networks and how they sway discussion of public issues or mobilize political action.

With so many people worldwide now managing their relationships, cultural activity, and connective action online, the networked operation of communicative power and impact is a critical field of study for Internet researchers across the social sciences and beyond. SMNA has informed topic communities research (Smith et al. 2014), information and crowd studies (Bennett et al. 2014), human geography and emergency responses (Bruns et al. 2012; Scifleet et al. 2013), audience research (Harrington et al. 2013), and political communications (Larsson and Moe 2013; Wheaton and Richey 2014). SMNA approaches have

future application in international security, health, business, and education – any discipline with a stake in understanding social connectedness, user agency and network relations, and, more controversially, predictive analysis of human behaviors.

Rather than having a unified conceptual base, SMNA has drawn on diverse and interlinked theories, concepts, and models to elucidate social network phenomena, including Travers and Milgram's (1969) "small world" proposal, which posits the social interconnectedness of any two unrelated people (see Barabási 2010). SMNA's instrumental tendency has seen recent research focus on the development of methods and tools to make social relations more visible. Social graphing gives insight into the nature of user relations and affinities, into degrees of connectedness and interaction. Network cartography builds knowledge of how online communities form, change, and dissipate. Topic definition is used to probe and delimit the textual associations that bind users. Data visualization represents how these relations are structured, who dominates and steers conversations, and how messages diffuse across networks. Any of these methods can call on automated processing of social media user information, messages, and metadata – but questions abound about how well big data analysis can interpret the complex dynamics of access, control, influence, and exploitation in social media systems, let alone the diverse cultural nuances of everyday social media use.

A critical analysis of SMNA use is essential to deriving deep, contextual information from big data flows (see Manovich 2011; boyd and Crawford 2012; Crawford et. al 2014). It acknowledges users as creative agents rather than just communicative nodes, actors with their own motivations, intentions, and information rights, who generate commercial, collective, and public value through their social production, the way in which the research ethics and design of big data inquiry often elide important questions of information sourcing and control, individual and collective authorship, and privacy and responsibility. For these reasons the chapter situates SMNA as a battleground on which debates about the ownership and governance of information networks are being played out, impacting on how (and if) these interactions can be studied. It also proposes that SMNA research may act as a catalyst for innovation and collaboration in digital information theory and methods.

The chapter begins by tracking the emergence of SMNA from sociometrics and automated forms of network analysis and explores its contemporary uses in studying communicative power flows across nations, communities, and geographic and political boundaries. It examines how a critical understanding of the actors, actions, and agency of social networking and the political economics of social media platforms might affect SMNA research design. Central issues here involve the ownership and control of social media data and ethical constraints on sharing datasets. The chapter then investigates diverse approaches to SMNA projects and some of the methodological problems that have emerged from applying traditional social network analysis to the capture, filtering, interpretation, and representation of real-time social media streams.

History and Concepts

SMNA is grounded in the classical sociological field of social network analysis (SNA), which seeks to understand the relationships between individuals, organizations, clubs, and societies through mapping and analysis of their social interactions, communications, and ties. SNA research seeks to collect both attribute data, about the characteristics of the actors within social groups, and relational data about the types and nature of their connective activities. Its central premise is that “social life is created primarily and most importantly by relations and the patterns formed by these relations” (Marin and Wellman 2013, p. 11) – patterns which can be made visible and interpreted by quantifying the actors in any given social network and certain characteristics of their interactions. More critical SNA approaches have examined how communicative power is shaped by unique cultural factors, social structures, or individual agencies. They also recognize that a complex mapping of social networks involves “a conception of the ‘social organism’, or social system, as a structure of institutions that constrain the subjectivity and actions of those who occupy positions within those institutions” (Scott 2012, p. 7).

When German sociologists Tönnies and Simmel began working on SNA circa 1932, they proposed the relationship between communicative actors could be represented by the intersection of nodes (social actors) and lines (their relationships) (Borgatti and Lopez-Kidwell 2013). In the 1940s anthropologist A.R. Radcliffe Brown proposed society needed to be understood as a wide network of social relations that could be mathematically mapped, measured, and interpreted. “Relational analysis” then was envisaged early in SNA scholarship, but the concept of the social “network” emerged explicitly through the work of Lewin and Moreno (see Granovetter 1976). They developed sociometry, the measurement and graphing of interpersonal and social relationships in space and over time. By combining the mapping of sociograms, a network visualization approach which represented people as nodes or points and their relationships as lines, with traditional sociology techniques, Moreno (1951) developed a mixed methods approach to probing group dynamics. Sociometry was used to understand both interdependence and agency in relations, “to identify leaders and isolated individuals, to uncover asymmetry and reciprocity, and to map chains of connection” (Scott 2017, p. 15).

The SNA phenomenology that developed over subsequent decades has identified several measures of social power and individual agency within networks. Centrality is concept that identifies the most connected nodes, while influence refers to the ranking of those nodes in relation to their social network, for example, in terms of accessibility to other nodes. There are several gauges of centrality, including degree, a node’s number of edges or relationships and closeness, or the number of “hops” between nodes. Bott (1957) suggests the concept of connectedness represents the level of “known-ness” among network actors, whereas network density “is the ratio of the number of ties actually observed to the number theoretically possible” (Granovetter 1976, p. 1288). A well-connected node is indicated by a high-density ratio of links where a low density would suggest a node with weaker ties to their

group. Through the mapping of centrality, connectedness, and density, twentieth-century sociologists and psychologists have probed the communicative influence of actors within their network relationships.

In the 1970s and 1980s, researchers began to investigate aspects of network transformation, noting social influence can change depending on network topology and social roles. Within certain social settings, some nodes act as intermediaries or gatekeepers, who enable or disable communication flows. Others may have low connectedness but be crucial in linking one network to others. Information will also flow in different directions because individuals have varying degrees of agency and involvement in the network. So the study of social and cultural ties and their effects on network development was a key step in conceptualizing the contextual operation of sociality.

As it evolved however, SNA took a consequential move from the study of influential individuals, or groups of individuals within a network, to more complex analysis of reciprocal relationships within online communities via the mathematics of graph theory. Social graphing involves the compilation of a matrix of values that indicate “individuals or other social actors and the presence or absence of the social relationship between each” (Carrington and Scott 2013, p. 4). Freeman’s 1977 model, for example, indicated that an actors’ centrality within the network, relative to their social graph, could be used to analyze the power, prestige, proximity, or trust to individuals (Freeman 2004; Freeman et al. 1989), helping researchers to understand how and why groups of users, or cliques, congregated. Although it has been critiqued for its focus on statistical measures over social complexity, graph theory has been influential in network cartography, the automated mapping of social networks. It provides the empirical basis for SMNA applications that represent online communication datasets as network visualizations.

Alongside sociometry, network analysis, and social graphing, two other fields of research have had a marked impact on SMNA – theories of network flow and structure and of network agency. Granovetter’s (1973) classic “strength of weak ties” theory is an example of the former. It proposed that organizational actors with strong ties have a high homophily, or likeness, but consequently little exposure to new information flows. Weak ties, conversely, are built between disparate social actors and are usually formed around novel information. Weak tie actors are organizationally useful because they can expose groups to new and potentially valuable knowledge.

Social network change theories, such as innovation diffusion and social capital development, have also been useful in exploring the impact of different types of relationships for actors and their social networks and the varying outcomes within any “topology of interconnections” (Borgatti and Lopez-Kidwell 2013, p. 5). Social capital research, for example, suggests how individuals are able to coordinate collective action and communicate ideas successfully, with more or less resistance, by analyzing “the networks of strong personal relationships, developed over time, that provide the basis for trust, co-operation, and collective action” (Cummings et al. 2006, p. 574).

When it finally appears in the late 2010s, SNMA is a hybrid application of SNA methodologies to social media data but more closely aligned with statistical notions such as data mining (Cheong and Cheong 2011) or network visualization and interpretation (Hansen et al. 2011) because of its use of computational approaches to automating data capture, indexing, analysis, and representation. Contemporary SNMA capitalizes on a particular moment in information science – social media enterprises' development of application programming interfaces (APIs), which provided third-party developers data for software and network innovation. In their algorithmic focus, SNMA accounts, like many other big data studies, often present themselves foremost as scientific and systematic ways of using social media information, affording social analysis of unprecedented scale and speed.

The risk is that they gloss over the new methodological challenges for social network analysis related to the structure and organization of always on, transnational, internetworked sociality. These challenges include how to interpret the relative communicative agency of users interacting in, and across, widely different cultural contexts and heterogenous social networks; how to interpret the forms of hypertextual, multimedia interaction they produce; how to critique the effects of commercial control on the composition of communicative flows; and how to map the scale of interactions that take server farms to transact.

Actors, Agency, and Context

As SNMA authors acknowledge to varying degrees, mapping network relations sometimes tells us little about what triggers particular forms of communicative action or interaction, or what directs and sustains it, and thus why users might (deliberately or unwittingly) play a certain network role at any given time. Equally network analytics and visualizations tend to present fixed 2D models of network organization, although we know that there are various degrees of instability and change in any social network over time. This makes research into the nature of agency, into social and cultural difference, into affiliation and resistance, and into social change over time central to an understanding of network transformation.

Various attempts have been made to characterize types of networked agency. Supovitz et al. (2015) define three groups of elite network actors who demonstrate more control over the social interaction of their networks than other individuals. Communicators or *transmitters* send the greatest number of messages and thus dominate information flows, while the messages of influencers or *transceivers* are most recommended, redistributed, and excerpted by others. Transmitters will have “disproportionate influence” over the messages that enter the network and so influence the topics of conversation (2015, p. 77). Transceivers on the other hand are conduits for information and opinion leaders. *Transcenders* are a small but highly influential group that both transmit and transceive and whose ideas and viewpoints may come to publicly represent those of their networks. In another taxonomy of agency, some users perform the critical role of *brokers*, interacting with otherwise unconnected groups or communities in ways that may lead to the

diffusion of ideas across political, national, or cultural boundaries (Gonzalez-Bailon and Wang 2016). Quantitative assessment of user actions and connections plays a pivotal role in rationalizing these social analyses and describing the capacities of various actors. Yet there is still widespread dispute about what constitutes influence in social media networks and how it relates to existing social status and resources.

As social capital scholars have noted, the flows of relational resources (information, opinions, knowledge) in any network are unevenly distributed, and individual actors may have differing capacities to access and employ them. The Six Degrees of Kevin Bacon game, where people track the actors who have made movies with Bacon, also shows just how tightly connected elite communities become through professional and creative ties. Recognition of individual actors' variable potential for self-expression or the creation of network effects has ignited interest in studies of agency in SMNA.

Humanist research defines agency as the limited/conditional causal power of individuals to act or react to make something happen (Ellis 2012). Actors have variable agency depending on their opportunity to learn, exercise decisions, and realize their plans. Agency, according to Latour (2013), is simply the power to act however it is conferred or configured. In his and John Law's actor-network theory (ANT), it is possessed of both human and nonhuman actors – not in the sense of individuals or social groups who might do things but as “actants” or material entities that have competences which endow them with the capacity to trigger action (Sayes 2014). In translation to SMNA, this insight focuses attention on the roles played by code, platforms, and communications infrastructures in social media network development. Scholars are now asking whether algorithmic agency, exemplified in information filters and automated feeds, has the capacity to cause harms (Tufekci 2015). ANT itself is not concerned with interpersonal or systemic power dynamics or how these play out in light of socioeconomic or cultural differences, but attention to these limits on individual agency is essential to capturing how and why social media networks change over time.

Recent SMNA research seeks to recognize social media systems as complex, dynamic structures that involve self-enrollment and relational recruitment, reciprocal interactions, and adaptive responses. On the more determinist side, agent-based modeling simulates and predicts the development of social media networks and the spread of information across those networks. Researchers approximate an agent's behaviors, properties, and the way it will interact with other agents within its environment, in order to model the possible macro patterns that might develop.

Social shaping of technology approaches, on the other hand, uses more traditional sociological methods to examine how situated uses of social networks, design factors, and social media practices affect the rhythms of networked sociality. SST also poses difficult questions about the validity of measuring approaches, about the contexts for data creation, and about the ethics of big data study (Dutton 2013).

Awareness of the way that market logics, surveillance, and structural inequalities impact on social media engagement may explain many variances in participation (see Graham et al. 2014). Studying the politics of social media enclosure, for example, reveals the impact of corporate strategy on how we communicate (Langlois

and Elmer 2013) and on the extent of social data visibility (Tufekci 2015). The need for users to trade personal privacy for platform access is a deterrent for some, a limit for others on the extent of public information they will release, and a cause for others to adopt pseudonyms or anti-tracking strategies. Corporate and government surveillance of social media networks also impacts on the form and scope of participation, especially around contentious political topics – even in Western democracies (Hampton et al. 2014). So the existence of power asymmetries is a given and a factor to be probed in SNMA research design.

One danger in computational analysis of social media activity lies in adopting what Rossiter and Zehle (2014) wryly calls “the ‘user-as-product’ approach.” Here social data is captured, indexed, and modeled with minimal regard for its originating intention or cultural context. SNMA research needs to be alert to the extent to which social media users in large-scale networks also operate as creative individuals with unique histories and affiliations, as well as political and economic rights. Thus trying to interpret, for example, users’ hashtagging behavior requires an accompanying conception of their investment in specific subcultures of hashtag use, which might reveal affective expression and forms of intentionality such as self-deprecation, humor, and provocation (Burnap et al. 2013).

Challenging analytical issues are apparent simply in apprehending the scope and diversity of data created by transnational platform use. Communications phenomena may require tracking across time zones and language groups, spanning interactions in several languages and scripts, as well as regional or localized differences in the formulation and spelling of keywords and phrases (see topic definition). Widespread image and symbol use pose new problems of cultural interpretation – for example, the use of emojis, to indicate affective status (Fordyce 2015), or the use of images to extend the communicative capacity of microblog systems. SNMA demands intricate interpretative work, recognizing that social media systems are:

...filled with signs that have unclear and frequently self-referential meanings before they are even quantified. It is clear what tweets, shares, and likes look like, but it is unclear what they mean; yet it is exactly their formal homogeneity that makes them interesting research data from a computational perspective. (Puschmann and Burgess 2014, p. 1702)

Another interpretive problem arises with painting SMNA as representative of large populations. Such claims elide potential sample biases in social media use. Twitter, for example, is used by much lower proportions of the Internet user population in many countries than Facebook or YouTube yet is the subject of many more studies of political and social behaviors. Like other big data studies, SMNA can exhibit the gamut of calculative distortions including disproportionality and lossiness (Busch 2015). Academics also tend to pay more attention to analyzing the data they can capture than information about those who might participate in less visible ways, reading rather than posting, or redistributing information via personal channels. In digital audience research, “Dark Social” refers to media sharing activity that can’t be easily tracked because it occurs on text messages, emails, and applications not accessible to the metrics regimes of major platforms. As Busch cautions,

where research aims to contribute to policy decisions, there should be a concerted effort to establish robust, precise, and representative datasets.

Fundamentally SMNA tends not even to allow easy comparisons between datasets from different platforms. Social media services exhibit systemic heterogeneity based on their distinctive business models, communicative features, and functionality. They may enable symmetric network building, between actors with mutually recognized social ties, or asymmetric network building, between actors who have little or no explicit knowledge of each other. Symmetric association is characteristic of social networking services such as Facebook, which require two actors to verify their social connection, enabling researchers to model a social graph of those relations. Asymmetric social media services such as Twitter, Instagram, Tumblr, and Pinterest host follower-based networks, with mutual tie verification for private messaging. They better support modeling of interest graphs and cultural preferences.

Aside from the effect that commercial logics of transnational social media platforms have on communicative and interpretative practices, critically the data they make available is neither owned nor controlled by the research community. This puts the spotlight on research rights and responsibilities and the ethical relations of aggregating and analyzing personal data for secondary public purposes.

Rights, Responsibilities, and Ethics

Popular social media platforms are in the main commercial systems designed to aggregate valuable data on user attributes, preferences, associations, purchases, and other activities. The public visibility and apparent accessibility of this data not only mask the corporate engineering of the data mentioned above but also the complicated legal and ethical issues that surround its secondary use for research – as became apparent when Facebook manipulated its flows to gauge the impact on users' emotional states, generating worldwide debate about the transparency of its algorithms and ethical responsibilities to its users (Kleinsman and Buckley 2015).

Platform terms of service (ToS) outline some of the basic conditions under which researchers may use and republish social network data. Commonly ToS indicate that social media and communications data is copyright to both the individual and the publishing platform. However with asymmetric follower-based systems such as Twitter, LinkedIn, or Instagram, where the accrual of status is based on network expansion and republication, there may be an implied license to redistribute some data in academic contexts, at least in fair dealing terms.

The secondary uses of individuals' personal data present more difficult challenges. Privacy protections vary across national and regional jurisdictions, and these may have broader consequences for the collection, storage, and republication of social media material. The European Union, for example, mandates that personally identifiable data must be handled according to data protection provisions (Council of Europe 1995) and in the past decade has expanded these protections to include rights

to object to data mining, the right to be forgotten (to request the removal of data from social media services), and the right to be informed when data security is breached.

Personal data protection provisions mean that informed consent procedures and data anonymization will always need consideration in SNMA research design and may need to be implemented depending on the study aims and publication intentions. Researchers need to be aware that social media data aggregation, mapping, and analysis can expose users' social activities and behavioral patterns in ways that they may not expect or want made apparent. The cross-referencing of social media data with other datasets, or its mapping longitudinally, can enable novel, unexpected analyses of individuals' milieu, habits, or tastes (Ockenden and Leslie 2015). As Lomborg and Bechman (2014) note, accumulated data may be perceived as more intimate and intrusive simply because of the depth of insight it can enable into a person's social life over time. Similarly while individuals may be happy to comment publicly on social media about their personal sexual preferences, religion, or politics, they may not wish to be identified by research as part of social movements or as exemplars of particular trends. Evidence of historic activities may not reflect their current behavior, associations, or beliefs.

It may not be practicable for scholars to seek informed consent from every individual whose information is gathered in big data studies of social media networks. Thus in reviewing the ethics of automated social media research, Lomborg and Bechman (2014) suggest scholars first consider the extent to which users have given explicit consent to the social media services they use for surveillance and study of their activities. Research design might examine whether the nature of the social exchange is considered to be legally public, as with Twitter's or Instagram's broadcast like systems; quasi-public, as with the subscription-based networks of LinkedIn and Foursquare; or semiprivate, as with Facebook, where users can opt out of levels of public scrutiny and surveillance. Researchers should also discuss whether their study is likely to expose either sensitive personal data or associate individuals with controversial social activities. In the interests of research transparency, there is a growing trend for big data scholars to publicly flag the conduct of new social media tracking research on the services they use and to invite comment on the conduct of the research.

Where individual informed consent is not sought, data anonymization may be necessary, either in the initial analysis or in the presentation of results. Anonymization may not always be desirable though, where qualitative assessment of the material is necessary to explain or extend the quantitative analysis. The feasibility of sharing SNMA datasets is also of some concern now that conferences and journals more often demand researchers to make their datasets available for scrutiny and evaluation. From the outset of an SMNA project it is critical then to establish whether legal license or ethical consents are required to publish the source data or whether there is a plausible alternative in making public the processed datasets.

Recognizing the ways in which social agency and the rights of research subjects affect the conduct of SNMA research is pivotal in conceptualizing how the complex power relations of social networks are configured and enacted. Analyzing the

political economics of social media services contributes equally important insights to the shaping of these dynamics.

Political Economics

In 2014 the transnational audience research company Nielsen was granted patents in North America, Australia, and China on any “methods, apparatus or articles of manufacture” which could be used to computationally measure or rank users in a social network (Swahar 2014). This move illustrates the increasing economic significance of research techniques for tracking social media exchanges, particularly in the field of strategic communications (public relations and political campaigning).

It also alerts us to the extent to which social networks and SMNA research are part of the business of social media and in ways that are not always transparent to research.

As mentioned earlier, SMNA data collection has been aided by APIs, the same tools that social media services used to expand their business reach and significance). An API is a software interface which allows one application to talk to another and the two applications to work in tandem. Social media platforms have provided APIs so that third-party developers can build new applications or services that improve or extend the functionality of the original platform. Social media scholars quickly recognized that these interfaces provided standardized streams of data about platform users, their activities, and the social graph that was being built. Conveniently this information was standardized, its collection could be automated, and it did not require direct contact with the users to gather. So API data extraction has become the predictable source of SMNA information.

Yet as Lomborg and Bechman (2014) argue, there is often little information available about how API data is assembled and represented and what gaps there may be in the feeds. This makes the generalizability, reliability, and validity of the data subject to challenge and critical to document accurately. Twitter, for example, provides several APIs, each which presents a different picture of its social flows. Its front-end search API enables users to manually search by user ID, keywords (individual words, phrases, or hashtags), and geographic locations. Its back-end public access streaming API enables automated polling of that data, using time-scheduled requests. However the sample of public streaming data varies depending on what is requested, time of request, and overall service demand. Comparative estimates of the flows provided suggest it returns only 1 and at most 5 percent of all status updates made, as well as limited calls on that data. The reliability of the sample depends on the parameters analyzed and varied over time (Morstatter et al. 2013).

Twitter’s business model is partly based on selling “full firehose” access to all activity on the platform, either current or historical, at costs which are often prohibitive for explorative or proof of concept studies. At the time of writing, Twitter’s subsidiary GNIP provided full datasets from Twitter, Tumblr, WordPress, and Foursquare but with pricing only on request. GNIP also offered to “enrich” the social data, by filtering its location or language, expanding shortened URLs, and ranking results by influence using their Klout score. Some caution should be

exercised in comparing SMNA studies to examine how the data was sampled and with what potential compositional biases.

SMNA researchers also need to be aware of the impact that intelligent agents or bots and paid human propagandists are having on the composition of social media network datasets. Bots are software scripts that act as agents for a human user or other programs and which simulate a human activity. In 2014 Twitter's annual report revealed that automatically updated accounts made up 8.5% of all its user activity, while an Italian cybersecurity study estimated 7.9% of Instagram accounts were bot driven (Stroppa et al. 2016). Some Twitter bots post status updates with useful insights or wit, social commentary, whose amplification alone is worth a study. @LatourBot, for example, generates random excerpts of Bruno Latour's writings, while @TwoHeadlines produces jokes or "accidental dystopias" (Robertson 2013) by scanning Google News, selecting a trending term and a related top headline, and then randomly replacing the original trending term with another. The proliferation of communicative bots has sparked growing research into bot-human interaction and self-organizing systems. Indeed Biggs (2012, p. 5) proposes creativity that might emerge from the actions of "a multi-modal social apparatus rather than, as is more commonly assumed, an attribute of individual or collective human agency."

More worryingly, paid propagandists – often labeled trolls or astroturfers – are increasingly active on social media, introducing potential biases into political science and communications studies. In China, the Communist People's Party has paid thousands of political bloggers, a cohort often labeled the 50-Cent Party, to distribute official propaganda on social media and to steer public discourse in approved directions (Edney 2014). More recently journalists and researchers have exposed the activity of a Russian troll army: "hundreds of paid bloggers [who] work round the clock to flood Russian internet forums, social networks and the comments sections of western publications with remarks praising the president, Vladimir Putin, and raging at the depravity and injustice of the west" (Walker 2015). Following recent combat in the Ukraine, Freedman documents the "deployment of an army of trolls with a mission to contradict and abuse those taking anti-Russian positions on social media" (2014, p. 23). Similarly SMNA techniques can be used to identify astroturfing, the automated spread of political messages from fake accounts to mimic the perception of grassroots support (Ratkiewicz et al. 2011).

Automated natural language processing filters have been successfully used to identify political spam-bots and astroturfing networks. However automated SNMA research is always vulnerable to the politicized gaming of networked engagement and organized attempts to manipulate the representation of public opinion online.

Again this potential for strategic bias makes the use of both quantitative and qualitative methods a preferred approach to SNMA projects.

Broader Sociological Research

In this chapter, we are framing SMNA as a methodology for investigating how communications networks operate across transnational, asynchronous messaging channels and are shaped by offline social and online network phenomena. In this

section, we turn our attention to the adaptability of SMNA research, reviewing examples undertaken in various disciplinary capacities and in different circumstances across crisis communication, health policy, crowd studies, and community studies.

Crisis communications on social media signal unique opportunities for researchers to understand how these platforms can be used to mobilize emergency responses and to identify how information, influence, and agency flow through communication networks during catastrophic events. In times of natural disasters, users are likely to take to social media platforms to share and seek information on affected areas, relief efforts, and the welfare of their friends and family. Communication flows include input from both authoritative agencies, such as local police and rescue services, nongovernmental aid organizations, individuals offering support or resources, and media organizations seeking information about unfolding events, and can be monitored for gaps in service provision or shifts in response requirements. Crisis communications SNMA may be analytical or predictive: “If current crisis events can be reliably identified from trends in Twitter data, for example, this would constitute a valuable new information input for emergency services, adding to their existing range of sources” (Bruns et al. 2012, p. 10).

The network spread of misinformation or propaganda during disasters is also of serious interest. In studying the Twitter communications following the 2010 earthquake in Chile, Mendoza, Poblete, and Castillo noted how quickly falsehoods spread “in the absence of first-hand information from traditional sources” (2010, p. 1). Network analyses identifying fake accounts and joke and malicious posts following the Boston Marathon bombing and Hurricane Sandy (Gupta et al. 2013) have generated new regimes of social media verification for policing and journalism.

Another practical application of SNMA research is in analyzing the development of formal and informal policy debates online and responses to the proposal or implementation of new forms of regulation. Many global North governments are embracing forms of digital government, online policy consultation, and co-production as a means of improving civil society participation in public sector innovation and canvassing policy alternatives. In public consultations around the US Food and Drug Administration Guidelines for Mobile Medical Applications (FDA 2015), the Obama government employed Facebook, YouTube, Twitter, and Flickr to communicate about the draft proposals and to encourage citizens to engage in regulatory discussions as the guidelines developed. Using SMNA of Twitter debates, Goggin et al. (2014) found strategic communications professionals were the dominant occupational participants in mHealth conversations and were among the key network influencers. Similar studies of lobbyist activity on social media are needed to spotlight how, and how effectively, these actors intervene in regulatory processes.

Studies of global connective action, like that spawned by Occupy Wall Street, have also rewritten SNMA approaches. #occupy relied heavily on social media platforms and networks to coordinate and mobilize protestors in multiple locations. This type of political activism, where major social media platforms are used to connect personal networks, has been described as crowd-enabled networking (Bennett et al. 2014). Twitter, and strategic hashtagging, became central to the movement and “For most of the protests, the prominence, volume, and overarching

role of the #ows stream made it the most likely place to send resources out to the most general level of the crowd” (Agarwal et al. 2014, p. 661). An analysis of Occupy tweets by Agarwal et al. (2014) explored how strategic hashtagging was used to maximize a message’s exposure and how geography operated as a constraint on group mobilization. In critically examining the #occupy movement, Agarwal et al. (2014) recognized that traditional organizational properties such as membership or geographical boundaries, intentionality of purpose, and recognized group hierarchies would not be relevant to the analysis of crowd-enabled networks. Instead they developed a novel model of organizational coherence with which to compare Occupy groups and other forms of bureaucratic and network collectivity, based on three structuring principles:

1. Resource mobilization and allocation: production and collection of goods to enable better collective operation
2. Response to external conditions: ability to recognize threats and opportunities
3. Coordinated long-term adaptation, change, or decline: internal shifts in production and deployment of resources

In designing and implementing SMNA research then, the frameworks, methods, and tools discussed here are only a starting point for what is a rapidly evolving field. Nevertheless there are some principles and practices that underpin deep data research and support further experimentation to address new research contexts.

Methods, Tools, and Practices

As a first step in SNMA research design, researchers are well served by developing a deep, preferably experiential, understanding of the platform they are studying and the ways in which their data investigation might be conducted. This knowledge supports a critical awareness of the affordances and participatory cultures of the softwares and platforms in question and how they will impact on the questions pursued. Each project might then begin with a standard interrogation: What is the nature of the social spaces, the practices of interface design, user access, social interaction, and participation that shape social relations on this particular social media platform? What options then present themselves for data acquisition, processing, analysis, and representation?

Science and technology studies suggest several approaches to acquiring these insights. Centrally, digital ethnography sees researchers become participant observers of a group or network, testing the software’s features, functions, and usability and documenting procedures, practices, and policies. Race (2015) also suggests the possibility of conducting an “ethnography of affordances” which has both empirical and speculative aspects, looking at how social media are being used as well as how they might be used. Not all project timelines allow for such immersion in the everyday life of a social network, so an alternative foundational step is to establish an interdisciplinary research team with computing science,

sociological and digital media expertise alongside the relevant field knowledge, and research associates with experiential knowledge of the social media environment in question.

The aims and form of investigation will shape the research design and the computational tools chosen for data collection or production, indexing and storage, cleaning, analysis, and visualization. However some basic principles apply to the gathering and processing of data for most SNMA projects.

A key step in the quantitative SNMA research design is then to build an informational model of the data capture and analysis proposed. This may involve testing the methods and assumptions of an existing methodology, but given the rapid rate of change in digital media environments, researchers will more often be experimenting with new techniques and approaches for gathering information about their objects. As real-time, self-organizing social networks, social media channels can also produce rapid and unpredictable fluctuations in the level of communicative activity being monitored and the geographic sources of that activity. Creating an information model of the analytical architecture and information flows helps test project feasibility, scope, and budget for resource requirements. Questions that will be addressed at this stage will include the duration, frequency, and size of data samples and the potential size of the data collection.

Much SNMA research relies on semantic analysis of keywords or phrases to identify and track user associations. Semantic factors may later be correlated with metadata such as time stamps or geolocation in order to constrain the dataset to particular periods or regions of activity. Topic definition however presents all the difficulties associated with determining core subject expressions, identifying their relevant contextual use, and discarding any linguistic ambiguities. Hashtags are not always used literally and often as a rhetorical device to “express emotion, or share a joke” (Scifleet et al. 2013). Keywords change over time through wordplay and argument. Data collection must be alert to the use of keywords in hyperlinks and to the operation of URL shorteners.

Data aggregation that is not API assisted requires the selection or development of tailored network crawlers, data scraping, and parsing scripts. The process of building or locating and trialling appropriate extraction tools needs to be factored into your pilot research design, as does the definition of file formats and database structures. At this stage it is important to consider the use of open-source tools and open standard file formats, which support easier collaboration between researchers. Open-source extraction tools such as Scrapy come with both documentation and a developer community. The use of open standard, nonproprietary, or commonly used file formats like .csv and .xml is also preferred for storage, rather than specialized formats that may date or that only a computer scientist can access and interpret. Social media data may need to be transformed or transcoded for ease of analysis and sharing among a research team or with colleagues and cleaned to eliminate artifacts or information that are not central to the analysis.

Finally in establishing the information architecture of your project, it is essential to secure sufficient processing power to analyze and visualize very large social datasets, like those associated with news or epidemiological corpora. Desktop

systems and applications are not built to process large amounts of data within a reasonable time, and big data work often requires high performance computing (HPC) services which perform parallel processing on computing clusters. Popular data visualization programs at the time of writing include NodeXL and Gephi. Gephi in particular is an open-source program available on GitHub (a web repository for source code and revisions), which aligns its ethos with that of the free and open-source software (FOSS) movement. Gephi development attracts a community of data analysts that are continually improving the software's functionality and extensibility.

The data visualization process is often the moment at which quantitative and qualitative methods are brought together. Researchers will represent the data that has been collected through a series of graphs and maps, with the aim of identifying patterns that bring "complex relationships to light" (Brath and Jonker 2015, p. 4). This analysis can have an iterative quality, with interpretations of the spatialized data used to refine and focus the research and interrogate sensitizing concepts in a manner similar to grounded theory projects (see Charmaz 2006). For example, the research may commence with the collection of data related to a particular phrase, hashtag, location, or user account. Network visualizations may then suggest phenomena that are worth further investigation using ethnography, semi-structured interviews, focus groups, or the like. Data visualization then becomes more than a method to present results: it is an essential part of the research methodology, involving the verification and cross-referencing of quantitative and qualitative methods.

In visualizing datasets as networks, the first analytical parsing usually involves some form of spatialization, where spatial information is "*assigned*" to the data elements during the visualization construction, rather than *given* by the data elements themselves" (Telea 2015, p. 10, author's own emphasis). Force-directed algorithms such as the Fruchterman-Rheingold are often used to graph the data so that it is more easily interpreted, with few crossing paths and any significant symmetries made obvious. Automated spatialization works so that "vertices in a graph repel each other according to a repulsive force. Edges in the graph exert an attractive force between the two vertices they connect" (Enright and Ouzinis 2015, p. 853) (Fig. 1).

Network visualization analysis then looks at "the relationship between *network structure* – the observed set of ties linking the members of a population...and the corresponding *social structure*, according to which individuals can be differentiated by their membership in socially distinct groups and roles" (Watts 2003, p. 48). While there is enormous variation in the algorithms analysts can employ to interrogate spatial representations of their network data, common queries include performing community detection and identifying network influence.

In the identifying community structures, modularity algorithms look for groups of nodes that are more closely connected to each other than the rest of the network, based on shared attributes such as use of a keyword or hashtag. The connections are displayed in terms of node size and location (indicating influence) and spatial proximity, where non-related nodes, in terms of the hashtag topic, are pushed to the boundaries of the diagram (Hutchinson 2015). Filters, color, node labeling, and image scaling can all be used to highlight interesting aspects of the resulting graph.

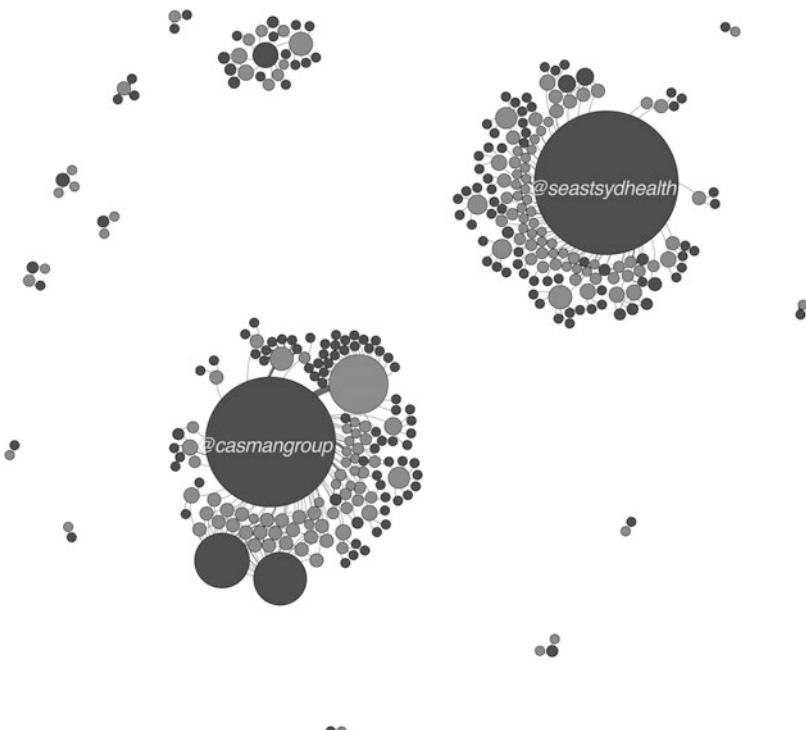


Fig. 1 A typical network visualization that uses the Fruchterman-Rheingold algorithm

In representing network influence, node size and centrality suggest communicative power, while directionality arrows can suggest patterns of attention or engagement.

Common critiques of network visualization concern its static representation of dynamic, longitudinal relations, its observer bias, and its potential to overemphasize the visual variables at the expense of other attributes. It is rare for SNMA teams to have visual design or cartographic expertise on board, and so a reliance on the automated functions of visualization applications may produce images of very basic graphical quality, limited sophistication, and relative complexity. For these reasons network maps operate best as cognitive tools or conceptual models rather than evidence.

Looking Ahead

The rise of social media network analysis is grounded in access to regularized, real-time streams of user data from social media services or technologies for capturing and interrogating that type of information on a more bespoke, modest scale.

This chapter suggests academic analyses of that information have to critically account for at least two black box moments – in the mediation of social media

communications by platform design and algorithmic agency and in the mediation of social network analysis by computational techniques of capture, classification, graphing, and projection. Revealing and critiquing those data relations is a primary challenge for researchers who want to expose the deeper relations and hierarchies of digital media and communications environments.

SMNA is certainly moving toward more critical interpretive practices, and in the hands of social theorists and political scientists is the location of new theoretical models for analyzing social organization, information production, and manipulation. There is arguably far more progress to be made however in recognizing the ethical and legal challenges of aggregating social data and synthesizing it for public discussion. While corporate ownership of social media data is well defined through rights and contracts, the rights of users and the responsibilities of researchers – particularly around the sharing of datasets and the communication of findings – need to be the focus for further research, debate, and negotiation.

References

- Agarwal SD, Bennett WL, Johnson CN, Walker S (2014) A model of crowd-enabled organization: theory and methods for understanding the role of Twitter in the occupy protests. *Int J Commun* 8:646–672
- Barabási A (2010) Introduction and keynote to a networked self. In: Papacharissi Z (ed) *A networked self: identity, community, and culture on social network sites*. Routledge, New York
- Bennett WL, Segerberg A, Walker S (2014) Organization in the crowd: peer production in large-scale networked protests. *Inf Commun Soc* 17(2):232–260
- Biggs S (ed) (2012) Remediating the social. Electronic literature as a model for creativity and innovation in practice (ELMCIP) initiative. University of Edinburgh, University of Bergen. http://elmcip.net/sites/default/files/files/attachments/criticalwriting/remediating_the_social_full.pdf
- Borgatti SP, Lopez-Kidwell V (2013) Network theory. In: Scott J, Carrington PJ (eds) *The SAGE handbook of social network analysis*. Sage, London, pp 40–54
- Bott E (1957) Family and social network. Tavistock Publications Limited, London
- boyd d, Crawford K (2012) Critical questions for big data: provocations for a cultural, technological, and scholarly phenomenon. *Inf Commun Soc* 15(5):662–679
- Brath R, Jonker D (2015) Graph analysis and visualization: discovering business opportunity in linked data. Wiley, Indianapolis
- Bruns A, Burgess J, Crawford K, Shaw F (2012) #qldfloodsand @QPSMedia: crisis communication on Twitter in the 2011 South East Queensland floods. ARC Centre for Creative Industries and Innovation. <http://www.cci.edu.au/floodsreport.pdf>. Accessed
- Burnap P, Avis NJ, Rana OF (2013) Making sense of self-reported socially significant data using computational methods. *Int J Soc Res Methodol* 16(3):215–230
- Busch L (2015) A dozen ways to get lost in translation: inherent challenges in large scale data sets. *Int J Commun* 8:1727–1744
- Carrington PJ, Scott J (2013) Introduction. In: Carrington PJ, Scott J (eds) *The SAGE handbook of social network analysis*. Sage, London, pp 1–8
- Charmaz K (2006) Constructing grounded theory: a practical guide through qualitative analysis, 1st edn. Sage, London

- Cheong F, Cheong C (2011) Social media data mining: a social network analysis of tweets during the 2010–2011 Australian floods. PACIS 2011 proceedings. Paper 46. <http://aisel.aisnet.org/pacis2011/46>. Accessed 4 Aug 2015
- Council of Europe (1995) On the protection of individuals with regard to the processing of personal data and on the free movement of such data. Directive 95/46/EC of the European Parliament and of the Council of Europe. 24 Oct 1995
- Crawford K, Miltner K, Gray ML (2014) Critiquing big data: politics, ethics, epistemology. *Int J Commun* 8:1663–1672. <http://ijoc.org/index.php/ijoc/article/view/2167/1164>
- Cummings S, Heeks R, Huysman M (2006) Knowledge and learning in online networks in development: a social-capital perspective. *Dev Pract* 16(6):570–586. <https://doi.org/10.1080/09614520600958215>
- Dutton W (2013) The social shaping of digital research. *Int J Soc Res Methodol* 16(3):177–195. <https://doi.org/10.1080/13645579.2013.774171>
- Edney K (2014) The globalization of Chinese propaganda: international power and domestic political cohesion. Palgrave Macmillan, New York
- Ellis B (2012) Social humanism: a new metaphysics. Routledge, New York/Oxon
- Enright AJ, Ouzinis CA (2015) BioLayout – an automatic graph layout algorithm for similarity visualization. *Bioinformatics* 17(9):853–854
- FDA (2015) U.S. food and drug administration guidelines for mobile medical applications. February 9. <https://www.fda.gov/downloads/MedicalDevices/.../UCM263366.pdf>
- Fordyce R (2015) Business fish goes all in: affect-images and the Facebook machine. Interdisciplinary Internet Institute. <http://theiii.org/?p=1373>. Accessed 28 May 2015
- Freedman L (2014) Ukraine and the art of limited war. *Survival* 56(6):7–38
- Freeman L (1977) A set of measures of centrality based on betweenness. *Sociometry* 40(1):35–41
- Freeman LC (2004) The development of social network analysis: a study in the sociology of science. Empirical Press, Vancouver
- Freeman LC, White DR, Romney AK (1989) Research methods in social network analysis. Transaction, New Brunswick
- Goggin G, Dwyer T, Martin F, Hutchinson J (2014) Finding mobile internet policy actors in big data: methodological concerns in social network analysis. Paper presented to Digital Humanities Australasia 2014: Expanding Horizons, The Australasian Association for Digital Humanities (aaDH) 18–21 March 2014, Perth
- Gonzalez-Bailon S, Wang N (2016) Networked discontent: the anatomy of protest campaigns in social media. *Social Networks* 44:95–104. <https://doi.org/10.1016/j.socnet.2015.07.003>
- Graham M, Hogan B, Straumann RK, Medhat A (2014) Uneven geographies of user-generated information: patterns of increasing informational poverty. *Ann Assoc Am Geogr* 104(4):746–764. <https://doi.org/10.1080/00045608.2014.910087>
- Granovetter M (1973) The strength of weak ties. *Am J Sociol* 78(6):1360–1380
- Granovetter M (1976) Network sampling: some first steps. *Am J Sociol* 81(6):1287–1303
- Gupta A, Lamba H, Kumaraguru P (2013) \$1.00 per RT #BostonMarathon #PrayForBoston: analyzing fake content on Twitter. Accepted at IEEE APWG eCrime Research Summit (eCRS), 2013
- Hampton KN, Rainie L, Lu W, Dwyer M, Shin I, Purcell K (2014) Social media and the ‘spiral of silence’. Pew Research Center, Washington, DC. <http://www.pewinternet.org/2014/08/26/social-media-and-the-spiral-of-silence/> Accessed 28 Nov 2014
- Hansen D, Schneiderman B, Smith MA (2011) Analyzing social media networks with NodeXL: insights from a connected world. Morgan Kaufmann, Burlington
- Harrington S, Highfield T, Bruns A (2013) More than a backchannel: Twitter and television. *Participations: J Audience Reception Stud* 10(1):405–409
- Himelboim I, Gleave E, Smith M (2009) Discussion catalysts in online political discussions: content importers and conversation starters. *J Comput-Mediat Commun* 14(4):771–789
- Himelboim I, McCreery S, Smith M (2013) Birds of a feather tweet together: integrating network and content analyses to examine cross-ideology exposure on Twitter. *J Comput-Mediat Commun* 18(2):40–60. <https://doi.org/10.1111/jcc4.12001>

- Hutchinson J (2015) The impact of social TV and audience participation on national cultural policy: co-creating television comedy with #7DaysLater. *Commun Polit Cult* 47(3):18–30
- Jupp V (2006) Network analysis. In: The SAGE dictionary of social research methods. Sage, Thousand Oaks
- Kleinsman J, Buckley S (2015) Facebook study: a little bit unethical but worth it? *Bioeth Inq* 12:179–182
- Latour B (2013) Biography of an inquiry: on a book about modes of existence. *Social Studies of Science* 43(2):287–301. <https://doi.org/10.1177/0306312712470751>
- Langlois G, Elmer G (2013) The research politics of social media platforms. *Cult Mach* 14:1–17
- Larsson AO, Moe H (2013) Untangling a complex media system. A comparative study of twitter-linking practices during three Scandinavian election campaigns. *Inf Commun Soc* 16(5): 775–794
- Lomborg S, Bechman A (2014) Using APIs for data collection on social media. *The information society: an international journal* 30(4):256–265. <https://doi.org/10.1080/01972243.2014.915276>
- Manovich L (2011) Trending: the promises and the challenges of big social data. In: Debates in the digital humanities. The University of Minnesota Press, Minneapolis. Retrieved from http://www.manovich.net/DOCS/Manovich_trending_paper.pdf. 7 Feb 2014
- Marin A, Wellman B (2013) Social network analysis: an introduction. In: Scott J, Carrington PJ (eds) *The SAGE handbook of social network analysis*. Sage, London, pp 11–25
- Mendoza M, Poblete B, Castillo C (2010) Twitter under crisis: can we trust what we RT? Paper presented at the 1st workshop on social media analytics (SOMA'10), Washington, DC
- Moreno JL (1951) Sociometry, experimental method and the science of society. An approach to a new political orientation. Beacon House, Beacon/New York
- Morstatter F, Pfeffer J, Lui H, Carley KM (2013). Is the sample good enough? Comparing data from Twitter's streaming API with Twitter's firehose. In: Proceedings of the seventh international AAAI conference on weblogs and social media; version at <http://arxiv.org/abs/1306.5204>. Accessed 25 Feb 2014
- Ockenden W, Leslie T (2015) What reporter will Ockenden's metadata reveals about his life. ABC News. August 24. <http://www.abc.net.au/news/2015-08-24/metadata-what-you-found-will-ockenden/6703626>
- Puschmann C, Burgess J (2014) Metaphors of big data. *Int J Commun* 8:1690–1709
- Race K (2015) Speculative pragmatism and intimate arrangements: online hook-up devices in gay life. *Cult Health Sex* 17(4):496–511
- Ratkiewicz J, Conover M, Meiss M, Gonçalves B, Patil S, Flammini A, Menczer F (2011) Truthy: mapping the spread of Astroturf in microblog streams. In: Proceedings of the 20th international conference companion on World Wide Web. Association for Computing Machinery, ACM, pp 249–252
- Robertson A (2013) The accidental dystopias of the @TwoHeadlines Twitter Bot. Retrieved 30 June 2015, from <http://www.theverge.com/2013/11/18/5118566/the-accidental-dystopia-of-twoheadlines-twitter-bot>
- Rossiter N, Zehle S (2014) Toward a politics of anonymity: algorithmic actors in the constitution of collective agency and the implications for global economic justice movements. In: Parker M, Cheney G, Fournier V, Land C (eds) *The Routledge companion to alternative organization*. Routledge, Oxon/New York
- Sayes EM (2014) Actor-network theory and methodology: just what does it mean to say that nonhumans have agency? *Soc Stud Sci* 44(1):134–149
- Scifleet P, Henninger M, Albright KH (2013) When social media are your source. *Inf Res* 18(3). <http://informationr.net/ir/18-3/colis/paperC41.html>. Accessed
- Scott J (2012) What is social network analysis. Bloomsbury Academic, London
- Scott J (2017) What is social network analysis? 4th edn. Sage, London/Thousand Oaks/New Delhi
- Smith MA, Rainie L, Shneiderman B, Himelboim I (2014) Mapping Twitter topic networks: from polarized crowds to community clusters. Pew Research Center's Internet & American Life

- Project. <http://www.pewinternet.org/2014/02/20/mapping-twitter-topic-networks-from-polarized-crowds-to-community-clusters/>. Accessed 12 Feb 2015
- Stroppa A, di Stefano D, Parrella B (2016) Social media and luxury goods counterfeit: a growing concern for government, industry and consumers worldwide. Washington Post. https://www.washingtonpost.com/blogs/the-switch/files/2016/05/IG_A2016_ST2.pdf
- Supovitz JA, Daly AJ, del Fresno M (2015) #CommonCore: how social media is changing the politics of education. HashtagCommonCore project. University of Pennsylvania: ScholarlyCommons. <http://repository.upenn.edu/hashtagcommoncore/1>. Accessed 29 June 2015
- Swahar G (2014) Methods, apparatus, and articles of manufacture to rank users in an online social network. Australian patent AU 2011202431
- Telea A (2015) Data visualization: principles and practice, 2nd edn. CRC Press, Boca Raton
- Travers J, Milgram S (1969) An experimental study of the small world problem. *Sociometry* 32(4):425–443
- Tufekci Z (2015) Algorithmic harms beyond Facebook and Google: emergent challenges of computational agency. *Colorado Technology Law Journal* 13 J on Telecomm & High Tech L, 203–218
- Walker S (2015) Salutin' Putin: inside a Russian troll house. theguardian.com. Thursday April 2. <http://www.theguardian.com/world/2015/apr/02/putin-kremlin-inside-russian-troll-house>. Accessed 30 June 2015
- Watts DJ (2003) Six degrees: the science of a connected age. Vintage, London
- Wheaton KJ, Richey MK (2014) The potential of social network analysis in intelligence e-international relations. 9 Jan 2014. Retrieved from <http://www.e-ir.info/2014/01/09/the-potential-of-social-network-analysis-in-intelligence/>



Embedded Ideology of Technical Media: Rethinking Subjectivities Within a Second-Order Cybernetics

48

Zachary J. McDowell

Contents

Introduction	880
Cybernetic Media Theory	880
The Cybernetic Subject	882
The Interface Effect of Technical Media	884
An Archaeology of Technical Media	885
Turning Us All into Pirates	887
Participation, Access, and Agency	888
References	892

Abstract

This chapter explores the second-order cybernetic relationship that emerges between technical systems employed within digital cultural production and the potentials for cultural shifts through exploring the architecture and interfaces of information and knowledge sharing systems.

This work makes new contributions to understanding not only the role of digital technologies in cultural production but also the role of digital technologies in the formation of the modern digital subject. Through this exploration this contribution argues that these technologies are turning the subject against legal and cultural norms and toward sharing cultures as the experience with digital technology undermines legal and cultural mandates.

Keywords

Cybernetics · Media theory · Cultural studies · Intellectual property · Copyright

Z. J. McDowell (✉)
University of Illinois at Chicago, Chicago, IL, USA
e-mail: zjm@uic.edu

Introduction

In Harvard Law Professor Lawrence Lessig's keynote at EDUCAUSE in 2009, a conference for using technology in higher education, he suggested that we are "turning our children into pirates" through our inadequate understanding of creative process and the limitations of current copyright laws. It is simple enough to acknowledge that digital technologies have become ubiquitous within modern society; smart phones, laptops, and a near-constant connection to the Internet is, for many, simply part of modern existence. What Lessig was referring in regard to digital technology not only suggests to digital technology's ubiquity but also begins to turn toward the next question at hand: how are these technologies shaping our culture? Within this simple statement, he observed that not only is digital cultural production an important and ubiquitous part of creative expression but also that, because of our current legal climate, many forms of creative expression (and culture creation) function within a legally complex (and sometimes suspicious) arena.

Digital cultural production in general is not just "simply" a cultural concern, comprising of intertwining determinations from market, legal, and social forces, but also an issue of media – not simply regarding media messages, but the medium of expression itself. This concern over "turning children into pirates" is more than just a battle between legal and cultural forces, but, as he suggests, it emerges from a limited understanding of creativity in the digital age. The purpose of this essay is to unpack the "embedded ideology" of technical media involved in digital cultural production, orienting a way of investigating subjectivities that encourages better accounting of the influence of technical media systems.

Cybernetic Media Theory

The framework of this media theory can be bookended by two incredibly short assertions. First, Friedrich Nietzsche remarked briefly that, regarding the use of a typewriter, "our writing tools are also working on our thoughts" (quoted in Kittler 1999, XXIX). The second is the deceptively simple statement by Marshall McLuhan that "the medium is the message" (McLuhan 1994). In combination with McLuhan's other famous statement, "the medium is the massage" (McLuhan and Fiore 2001), a more accurate description of media starts to form: media are both the systems through which messages flow, as well as determinant of the message itself. Taken this way we could read McLuhan's statements together as "the message of the medium is the manner of its massage." Combined with Nietzsche's statement, we can start to think about how the tools with which we create, recombine, and circulate messages are implements of inscription and re-inscription and follow this principle. Rather than taking McLuhan's famous subtitle that media are "extensions of man," at face value, it is better to assess these extensions as cybernetic (a closed feedback system) that mediate the messages circulated through them, affecting not only the message itself but the consciousness of those engaged within these mediations.

When Norbert Wiener employed the term “cybernetics” in *Cybernetics: Or Control and Communication in the Animal and the Machine*, he began by linking the notion of control to communication and technology. Wiener summarizes the name choice: “We have decided to call the entire field of control and communication theory, whether in the machine or the animal, by the same name cybernetics” (Wiener 1965, 11). Although originally conceptualized in engineering, the framework still holds for understanding systems of communication and control across a variety of disciplines.

Claude Shannon’s communication model published in *A Mathematical Theory of Communication* is a helpful starting point for thinking about cybernetic determination. This “transmission model” of communication incorporates a series of communication systems elements within its rather simple design – information source, transmitter, channel, noise, reception, destination, and feedback (and more, depending on which discipline it is used by). On a basic level, this model approaches communication as something that happens between two or more independent systems, which interact through transmitting and receiving messages. These systems either “understand” each other or, due to some noise within the process of transmission, misunderstand each other. Commonplace understandings of this model assume that misunderstanding or distortion of meaning emerges from the “channel” through “noise.” This is the first (or at least the most famous within the study of communication) model that presupposes that the channel, or as Shannon (and later co-author Weaver) explains, “the medium used to transmit the signal from transmitter to receiver” (Shannon and Weaver 1949, 33), is of utmost importance to message transmission and is particularly important when considering message mutation or other interference.

Marshal McLuhan, whether meaning to or not, echoed Shannon’s model into his own theory of communication, most notably with his famous statements that bookend this framework, “the medium is the message” and “the medium is the massage.” Nicholas Gane notes that “McLuhan drops Shannon and Weaver’s focus on the mathematics of information, but at the same time follows the basic line of their argument by prioritizing analysis of the technology of message transmission over interpretation of its content... In this way, McLuhan’s famous declaration that the ‘medium is the message’ develops the thinking of Shannon and Weaver... by asserting the role of the channel (which Weaver also calls a medium) in shaping the content of what is transmitted (rather than vice versa)” (2005, 25). For McLuhan, the power of the medium to transform messages became the object of analysis rather than the messages themselves. The “medium” carried all the same aspects of Shannon and Weaver’s “noise” and more. McLuhan writes: “What they call ‘NOISE,’ I call the medium—that is, all the side-effects, all the unintended patterns and changes” (quoted in Cavell 1999, 350).

Shannon and Weaver additionally argued that “any limitations discovered in the theory at level A necessarily apply to levels B and C,” noting that the medium was not only primary importance to all other levels of abstraction, but as “the theory of level A is, at least to a significant degree, a theory of levels B and C,” each level of message mutation theory in communication was, at the very least, intertwined in

medium theory (Shannon and Weaver 1949, 6), echoing McLuhan when he noted “the content of a new medium is always that of an old medium” (McLuhan 1994, 8).

Although Weiner, Shannon and Weaver, and McLuhan were all investigating the *channels* of communication, it was evident even in these early models that there was more going on than simply transmission. Their transmission models included a feedback loop, recognizing the interaction between sender and receiver, influencing the messages the sender generates.

The Cybernetic Subject

More recently, Donna Haraway refers to the cyborg as “text, machine, body, and metaphor-all theorized and engaged in practice in terms of communication” (Haraway 1991, 212). Considered this way, communication is not merely an operation of the cyborg, but the operation that is constitutive of “cyborg.” For Haraway, without communication there cannot be cyborg, and through communication the cyborg emerges as itself through communication within a feedback system. The feedback systems here do not need to be purely technological in the strictest sense but that which the subject communicates with or through and receives feedback from. These systems could be purely architectural or “natural,” determining paths of travel, not only those which we attempt to send proper “messages” to other subjects. In the simplest sense, the cyborg is a subject that is engaged in communicative feedback exchanges. Haraway moved beyond the popularized *Terminator* concept, noting that “we are [already] cyborgs” (1991). Cyborgs are not just “technologically enhanced” human beings but instead a way of thinking about humanity by eroding the artificially imposed boundaries between the natural and artificial and noting that all humans engage in this communicative feedback loop that is both supplementary and both internal and external. Cybernetic systems and therefore any discussion of control and the cyborg are composed of more than just a binary biological and mechanical/technical. This feedback system can be linked with the notion of determination and overdetermination and involves a variety of economic, biological, social, architectural, and technical relays and feedback systems. These determinations, though, as seen through the framework of the cyborg, become transformed into a larger system of feedback where the cyborg subject begins to affect that which has an effect on itself.

David Gunkel’s “We are Borg: Cyborgs and the Subject of Communication” also makes this observation explicit in a tip of the hat to Star Trek: “We are already Borg” (Gunkel 2000, 340). If we are already cyborgs, then it is not that we are not (usually) zombie slaves to a collective, but instead that we are complex subjects that rely on a vast array of organic and inorganic feedback systems, technologies, and mediums that shift horizons of possibility and participate in controlling (and determining) our existence. It is not that we need to destroy the concept of subjectivity in general, but rather delimit a “postmodern subjectivity that deconstructs the presumptuous, sovereign individual of modernity” (*Ibid.*, 344), transforming “simple” subjectivity into something more complex and nuanced and recognizing the impact that various

determinants have on culture, communities, and individuals. Although the idea of the cyborg subject opens up a new way to consider feedback loops in the constitution of subjectivity, it still does not highlight the primacy of the media within this complex feedback loop system, one that, in consideration of this, is constitutive of the entire process.

Despite the theoretical frameworks pointing in a similar direction, there exists an underlying concern that “we live in communication while theorizing about it” (Krippendorff 1996, 312), so we must be careful when attempting to isolate and understand the individual subject in communication research. Krippendorff explains:

Neither can we understand a You as an isolated individual and from a detached observer’s position nor can we compose a You from known parts the way engineers design systems from existing components, precisely because I and You as well as the particular relation between them evolve in processes of mutual adjustment. (*Ibid.*, 319)

Krippendorff’s “second-order cybernetics” is helpful here with considering the greater impact of the cybernetic feedback system, as each component is understood as connected, not just humans in communication, but different components of each communication system, as well as “the particular relations between them.” There must be a “second order” to the cybernetic understanding of the subject as always already in the cybernetic system. These systems that are in conversation were and are influencing their current and future states. The cybernetic system is mobile and connected, with each piece influencing the potential futures of each other piece. The “simple” notion of assessing a cybernetic system no longer functions when the system itself becomes influenced by the consideration of itself. These are a series of relationships that co-constitute each element within the system.

Conceptions of You and I are always complementary. A mother does not exist without a child. There can be no buyer without a seller. Actors and audiences require each Other... Complementarity must not be confused with equality, however... It simply suggests that roles somehow fit like hand in glove (not like hand in hand) and the difference between them is constitutive of a particular relationship. (*Ibid.*, 318)

Digital technologies help to complicate the understanding of these cybernetic relays, effecting and mutating the media due to their architectural makeup – interacting and determining subjects through their deliveries. Rather than examining individual or mass communication in traditional frameworks, thinking with cybernetics to examine complex feedback systems helps to lay out a better framework of how technical-human communication systems circulate and mutate messages and meaning in an always connected society. The conceptualization of the human-as-cyborg moves beyond the “simple” cybernetic notion of feedback loops and influences among those lines and starts to highlight the more technical and more “robotic” aspects of the cyborg through understanding how technical media assists in constituting a horizon of possibilities through these technically mediated relationships.

This framework helps to think about what digital media represent for that horizon: dividing, collecting, distributing, and multiplying digital snippets of culture against the prevailing economic and legal norms. Understanding these components as a massively entangled and co-constitutive constellation of relationships frames the basis for understanding a more complex study of culture and cultural production in a digitally mediated world.

The Interface Effect of Technical Media

There are at least two points of possible mutation when it comes to technical media. The first being in the media itself, within its architecture, but the second lies with its interface. The notion of “interface” can be understood in multiple ways. At its most basic level, an interface is the point at which two (or more) systems meet, whether it be subjects, technological systems, organizations, or a mix between them. There are human/technology interfaces, as well as interfaces between two or more technical systems. As the point at which these systems meet, this interface is a medium, a mediator, between the systems. This interface is not merely a direct translation from one system to another, but an interpretation that has limitations, requires specific types of input, and, as a medium, actively interacts with the systems that it engages with. Although often more concerned about human/technology interface, there is often an entire “stack” of technical media (such as a Web “stack,” the collection of hardware and software which powers Internet servers, in which components pass messages to each other without human interaction) and how each technical media components interface with each other can relate back to the human subject.

Heidegger’s hammer (see Heidegger 1962) is a type of “simple” human/technology interface, where the two “systems” meet – the self and the hammer – co-constituting and transforming each other. There is a physical requirement to pick up and operate the hammer, one that depends on an ability to hold the hammer in a particular way, which constitutes the physical attributes and architecture of the interface, and there is a way in which the hammer allows and encourages a particular type of action, which is a particular “effect” of the interface, which allows this transformation and co-constitution (for the hammer is only hammer when it performs its task, otherwise it might be a paperweight). The media system itself can transform messages, but the interface of systems requires a particular type of interaction; to engage with these systems, subjects must bend to the interface.

The hammer seems simple enough, but others (e.g., Facebook’s interface) require more specialized knowledge and particular contexts for engagement. Often the messages that are allowed through the interface are limited, requiring message construction to bend to the interface. A keyboard, for example, is required to input data into a field, and possibly that field, for example, on Twitter, has character limitations. Due to this contortion, systems not only change the messages but also force the subjects sending those messages to change. Interfaces are, then, boundaries and places of crisis – where

shifts and comportment take place, restricting, limiting, and effecting both message and subject. Alexander Galloway asserts that interface should not be conceived as “thing” but instead as an “effect” which contains an ethic (Galloway 2013, 23). It is an effect only insofar as this is the only way we might notice it – because interface is meant to be inconspicuous, or, as in the case of Twitter’s character limitation, the acknowledged parameters of the form become normalized. This effect has a particular ethic; an ethic that is not “good or bad” but also is not “neutral,” as its effect makes or causes change. An intrusive interface is, by design standards, a bad interface, so most interfaces go unnoticed, as do their effects. Interface is usually only visible to those who are frustrated by it, unable to understand or interact with it – unable to negotiate the multiple communicative elements of the interface. Thinking about the “ethic” of the media and how the subject’s interaction with the media changes both the subject and the horizon of possibilities for the subject’s media transmission, interaction, and creation reframes the way that each media system and interface can be approached to understand the intricacies of the media itself.

An Archaeology of Technical Media

The premise of archaeology, in Foucault’s terminology, is that discursive formations are governed by rules, beyond those of grammar and logic, and they operate beneath the consciousness of individual subjects, defining a system of conceptual possibilities that determine the boundaries of thought in a given domain and period (see Foucault 1982). These are “hidden” systems of conditions and relations, secretly influencing discursive practices. These systems need to be excavated, so to speak, to both understand how they operate and to enlighten those affected by the systems. As already discussed, the architecture of media operates in a similar, hidden way, as they function through naturalized interactions and interfaces, encouraging and limiting conceptual possibilities.

Kittler helps rethink Foucault’s noble investigative process along these technical media lines, reminding us that “Even writing itself, before it ends up in libraries, is a communication medium, the technology which the archeologist [Foucault] simply forgot” (Kittler 1999, 5). Kittler’s predilection for bombastic rhetoric aside helps to shift a conceptualization of Foucault’s process of archaeology toward an engagement with a different and arguably more primary piece of the historical puzzle, technical media.

Kittler begins his theorization of media in *Gramophone, Film, Typewriter* with the nebulous line “Media determine our situation” (*Ibid.*, xxxix). Kittler’s translator, Geoffrey Winthrop-Young, in his introduction to the same book, elaborates a bit more on Kittler’s opening words:

If media do indeed ‘determine our situation,’ then they no doubt also determine, and hence configure, our intellectual operations. One could easily re-appropriate Derrida’s much-deferred pronouncement [there is no outside of the text] and suggest that the fundamental premise of media discourse analysis is [there is no outside of media]. (*Ibid.*, XX)

Rather than stopping, or even beginning at discourse, it is best to conceptualize that all discursive practices are dependent on media, and therefore media is the place to investigate first. Kittler notes that media “are (at) the end of theory because in practice they were already there to begin with.” If we follow the same logic of Hall’s determination (see Hall 1996), media are also at the beginning of theory (Kittler 1999, XX). Putting these together, this particular goal of “media archaeology” is to uncover the hidden ways in which mediums influence the messages that are circulated through and by them by placing media in “the first instance.”

An investigation of these “natural” media systems that circulate and disseminate messages allows us to ask questions not only about what is going on but how these systems have become naturalized, allowing for a better assessment of the current situation. Parikka notes that “archaeology is always, implicitly or explicitly, about the present: what is our present moment in its objects, discourses and practices, and how did it become to be perceived as reality” (Parikka 2012, 10) and that media archaeology is an important focus because media “are the new architectures of power,” and “power becomes hardwired to technology” (*Ibid.*, 82), even though this power remains hidden.

Unlike Foucault’s archaeology, media archaeological investigations are not as concerned with particular “spatial places and institutions” or “practices of languages” but instead on “switches and relays, software and hardware, protocols and circuits of which our technical media systems are made” (*Ibid.*, 70). These are hidden not only due to their naturalization but physically hidden either in deep within the circuitry of a handheld device or in the literal “black box” of a computer, whether it exists in a desktop or in the “cloud” of large, hidden, server racks in the belly of warehouses spread across the world.

Thinking along these lines, media archaeology orients an investigation that begins with the “materiality of the informatics machines... commands, addresses, and data,” which participate in a different type of ontology, a different type of “nature” which the subject is also “thrown” into. The influence of random access memory, of microprocessors, of the “stack” of intersecting technologies that form each node within the vast networked construction we call “the Internet” is not simply just another aspect of determination but constitutive of “the worldhood of the world,” of the natural experience of the technical cybernetic subject.

An archaeology of the digital media, then, is a reorientation of how to think about the embedded ethic of sharing in a way that forefronts the influences of modern technical media. It is a constellation of media systems and as a form that emerged under particular legal, social, and economic conditions begins to illuminate not only the hidden determinants in the form but the determinants hidden within components of digitally mediated cultural production. Understanding the cybernetic subject through this framework illuminates more about current digitally mediated cultural production and enlightens potential futures that are hidden within these architectures of power.

Turning Us All into Pirates

The “turning into pirates” that Lessig expresses concern over is twofold: the turning that seems to come from *law*, and the turning that comes from technical media. The turning that comes from law is both determination in Hall’s (1996) notion of determination and also in a nomological sense. It names the pirate. However, the turning that comes from technical media is not *simply* determinant in the traditional sense. The turning that comes from technical media is a cybernetic one that is in conversation and discourse with the determinant media. Digital media turn us into cyborgs, yes, but to paraphrase both Haraway and Gunkel, “we have always been [cy]borg,” so this cybernetic metaphor is not a new framework (Gunkel 2000, 340). Cyborgs, of course, are in conversation, and these conversations can mutate the pieces within this larger cybernetic postal system. Different types of feedback loops that come from technical media change, evolve, and have different *effects* as they themselves evolve. As discussed before, Heidegger’s hammer changes the consciousness of what is possible for the subject, which also informs the subject about the future of possible tools. The rock might have begat the hammer through its relationship with the subject and, eventually through a long history of relationships, begat the nail-gun. Technical media work in a similar way, where those creating our tools are also functioning within this larger postal system of mediating messages.

This turning from law is also one that functions in its own relationship with technical media. These messages work against each other and also in combination, the law seeking to prevent an action through this pirate determination and naming and the technical media working against it through the normalization of actions and cultural practices that are now referred to as *piracy*. Despite the supposed intent of preventing a series of actions, the power of the technical media is one that identifies this legal determination as suspicious and unnatural to the cybernetic subject.

These cyborg *pirates* are not only determined and named by the force of the law, but the pirate-ization of the (always already) cyborg also comes from the continuing cyborg-ization of the subject, evolving its horizon of opportunities through the interaction with digital media sharing, creation, and ingestion. Of course, these two “turnings” happen at the same time and are continuously in flux and in cycle within this cybernetic exchange. Each interaction changes the cybernetic subject’s various components that form the cybernetic relationships constitutive of the cyborg, as well as its pirate indoctrination. These exchanges of messages happen through at least two modes of interaction:

First of all, the cyborg interacts with the simplicity of digital circulation. Whether through a click of the mouse or finger on a share, send, download, or upload button, this requires the subject to comport themselves to a particular interface. This interface requires an assumption that the message is something that can be circulated and does not violate (or at least that the subject does not believe they will be located as a recipient of punishment) laws or social norms. The ease of circulation of messages, of passing along pieces of perfectly copied data, sends its own message

to the subject, one that helps to inform the subject about the further circulation of messages: access to this circulation is free and easy and should remain so to continue this circulation for others.

Secondly, through participation in a variety of digitally mediated communities, whether as a “lurker” or an active conspirator, the subject becomes the recipient of the circulating message addressing the subject as participant and in that addressing carries with them narratives of agency. Whether agency manifests as the ability to learn new interfaces and remix new messages, or, as with Wikipedia, in the collaborative effort to produce a knowledge, the narratives insist that many determinations of culture are often just spectral presences that can be easily dismissed. This cyborg pirate has a different outlook on the possibilities at hand, encouraged to participate in a variety of forms on a variety of projects.

Participation, Access, and Agency

As the original utopian promises of equal access for all met the reality of walled gardens and high barriers for participation, many individuals and organizations have turned their attention toward access. This has a long history within computing, even personal computing – simply comparing the interface for the 1977 Apple II and the first Macintosh in 1984 showed a quantum leap in accessibility and attention to the user experience. The Apple II itself was a quantum leap over many of the computing systems available at the time, not only costing a fraction of what others cost but also in comparison to previous generations it was incredibly accessible. The interface of the 1974 Altair 8800, for example, much like many of the computers at the time, was a series of toggle switches and LED lights. On top of this strange interface, the Altair 8800 was sold as a kit-of-parts, relying on the ability of users to assemble complicated electronics. The 1976 Apple I was also quite inaccessible from a modern perspective, sold simply as a circuit board, requiring users to assemble the case and keyboard. Despite feeling old and dated, the ability for a user to purchase a fully functioning Apple II computer in 1977 was groundbreaking, and 1984's introduction of a monochrome graphical user interface (GUI) and mouse was nothing short of revolutionary.

Fast-forward to more contemporary computers where Apple's *GarageBand* is pre-installed on every Macintosh computer, these software and hardware combinations continuously lower the bar for these “laptop musicians” to create music using either the prepackaged samples or their own sampled loops and clips. Accessibility has become a key feature of these new technical media systems, promoting ease of use with each new hardware model and software upgrade striving to erase the aggravation of previous interfaces while simultaneously increasing the power of the digital manipulation tools. Modern tablet computing is a prime example of this interface simplification, bringing the screen and input together into one device, allowing the user to “touch” digital media.

Invitations to participating in various forms of digital culture are numerous, where simple forms and clicks can create new memes, share or fork (split off to

create a new version based off the previous) entire software packages, or manipulate video or musical tracks in various manners from the comfort of your favorite browser. There are active discussions in numerous groups about how to increase participation levels through redesigning interfaces and rules and how to combat systemic biases in participation levels. Whether or not participants are active creators has little effect on the fact that these participants continue to receive and circulate these same messages of access, agency, and the invitation to participate.

This turn (the cyborg pirate turn) is more than just a turn that just spreads messages. This turn has multiple interlocking parts, a second-order cybernetic relationship where this turn toward access, agency, and participation also influences the future of the proverbial glove it continues to influence the proverbial hand. This mutation is one that not only just circulates messages but circulates messages to those who create and upgrade the circulation machines, instructing the new machines to circulate messages better, more efficiently, and more openly inviting to the next wave of cyborg pirates. This is ongoing, continuous, and potentially exponential in growth and influence. When Nietzsche said, “our writing tools are also working on our thoughts” (Quoted in Kittler 1999, XXIX), the implication was always there: the machines that we made, that are working on our thoughts, are influencing the thoughts we have when we are making the next writing machines.

Those who are already worked on will design the next machines, and those machines will be working on our already-worked-on thoughts. Of course, McLuhan hinted at this when he discussed how “the content of a new medium is always that of an old medium” (McLuhan 1994, 8), as each new technological tool that has worked on our thoughts continues to perpetuate the “whatever” of this technologic. These new machines, however, are more than just mechanical systems of gears and levers, and digital media packages remain constituted by this digital enclosure – they all are constituted by ones and zeros and, of course, by code.

Steven Levy’s 2001 *Hackers: Heroes of the computer revolution* offers an interesting insight into some of the early years of computer programmers and manufacturers and how this ethos has been reinscribed over the years of the digital revolution. Levy points out that these “hackers,” such as Bill Gates, founder of Microsoft, Steve Jobs and Steve Wozniak, cofounders of Apple Computers, as well as others like Richard Stallman, creator of GNU and EMACS, were concerned (at the time) with how computing had been stifled by not making it accessible (not in a “learn to code” way but literally locked down with security, expensive hardware, and code that was filled with problematic “bugs” but could not be fixed). These “hackers” figured out how to create their own computing systems, wrote their own computing languages, and subvert the status quo to help spread computing accessibility. Regardless of the later actions of Gates or Jobs, they all helped to increase access to computers by making them universal, affordable, and accessible (by some). This ethic of access, participation, and agency arose from early MIT hacking and continued to spread through these digital systems, each new creation informed by the previous ethic.

The spread of Free/Libre “Open Source” (FLOSS) software movement sparked partially by Richard Stallman, and part of this “hacker ethic” has rapidly overtaken much of the coding ethic. In most commercial software, the “source” code is under literal erasure as it has been translated to machine code by “compiler” software that takes the human readable and writeable code and translates it into something for computers to process. In FLOSS software, the “source” code is shared freely for those who understand that particular “language” to download, modify, or contribute to a software project. Some of the most widely used software packages are based off of or completely “open source,” such as the Android operating system, the Firefox browser, and a variety of digital media manipulation tools, like Blender (an 3D animation software package), Ardour (a music mixing and editing package), and HandBrake (a digital encoding/transcoding software package). Often referred to as a LAMP stack, the software package that runs a majority of the Internet’s servers is comprised of Linux, Apache, MySQL, and PHP. One of Stallman’s own major FLOSS contributions, GNU, is a major component of Linux, often referred to as GNU/Linux.

Participants in FLOSS projects often share their projects with SourceForge or more recently using Git, the latter a version control software created by Linus Torvalds, the creator and namesake of Linux (Linus and UNIX, the inspiring operating system for Linux). Git allows users to not only upload and share their FLOSS projects but also to “fork” (create different trajectories for software development while still retaining parental associations) and collaborate on software development. Originally just a version control system for Linux development, the ethic has passed through into Git, which has been continuously been advanced to increase participation and access among software developers in order to promote additional FLOSS projects.

The barrier to access continued to crumble with digital media, and this ethic eventually informed a concern for barriers for participating in coding. Today not only is there a “National Day of Civic Hacking,” as well as numerous other “Hackathons,” but there are calls at the national level to increase coding skills in public schools. Online services such as Codecademy offer free courses on multiple programming languages, and, of course, MIT’s sponsored “open courseware” offers free college-level introductions to computer science and programming. Coding software, for some, is a component in key digital literacy, no longer just for the few software developers but participation is openly encouraged from everyone.

Of course, as Kittler notes “there is no software,” (1995) as every piece of code is regulated by hardware, embodying its own ethic, its own set of determinations encoded within the medium. Even microprocessors require other microprocessors to design a cybernetic postal exchange that exists within every mode of “writing”:

The last historical act of writing may well have been the moment when, in the early seventies, the Intel engineers laid out some dozen square meters of blueprint paper in order to design the hardware architecture of their first integrated microprocessor. (*Ibid.*, 147)

Parikka illuminates Kittler's premise by explaining that we no longer have "direct" access to writing because "texts do not exist any more in time and space that we human beings can perceive, only in computer memory" (2012, 80). This computerized ethic is totalizing, as it infects each and every medium with these digital tools, processing all messages, even those we believe are still simply "writing." This is helpful to understand as even these coding systems are participating within an array of mediation. Not only is the software we write to create other software mediated through these hardware components, but additional hardware components are designed using this nearly un-packable history of software-designed-through-hardware and hardware-designed-through-software. In short, there is no escaping the digital mediation within contemporary society as these determinations run deep within our computerized systems.

Each new technology continues to carry the messages, which in turn "work on our thoughts" and, as McLuhan notes, "work us over completely" (2001, 26), transforming not only who we are but what we continue to produce in each new media form. Writing, transformed by the ones and zeros of microprocessors, and then further by microprocessors designing their own successors, continues to carry each mutated message. These technologies, cybernetically engaging us, continue to determine the boundaries and possibilities.

Despite positivity toward the future evolution of the cybernetic subject against cultural control systems, the numerous downsides to architectural determination cannot be ignored. Digital media technologies may have opened up a way for the subject to "retake" the orientation toward cultural sharing from legal and social pressures, but they also have become the space for archiving and accumulation of the subject's personal and information. The digital subject is one that can not only share perfectly but also move and function within a perfectly surveilled world. The "analog world" (or "meatspace" as it has often been called by online communities) may be slower to share, disseminate, and remix culture, but each bit of data and every trace of the subject's online "footprint" are passed openly.

This orientation does not "fix" the issues relating to access, participation, and advocacy, but it does provide a set of possible futures, particularly one of potentially increased inclusion. Through continued cybernetic evolution, each piece within this larger media system is slowly reshaped and reformulated via the embedded ethic of digital technical media. This ethic is more of a promise than anything, a promise that continues to echo through multiple media channels. Even traditional print, radio, and television advertising for computer systems and software offer promises of ease of use, promise of creative avenues, and empowering systems. Legal systems change too, as cybernetic subjects looking to ensure future proliferation of these messages lobby new laws or changes to existing laws. These messages continue to participate within this larger constellation of message circulation, slowly changing the face of everything around them.

The question is not "what to do about it" but simply to trace out the different components operating within this particular phenomena and leave a door open to how to assess the possible futures of these message circulations. Understanding the method which messages are mutated and transformed, considering the effects of the interface,

and considering how these fit in a cybernetic relationship, opens up a new way to think about technical media as mutating and in a constantly changing and evolving relationship with the (always-already) cybernetic subject. Utilizing this way of assessing technical media can reorient a way to understand a myriad of cultural phenomena, from privacy and security to cultural production and digital labor.

In short, Lessig was right – we *are* turning our children into pirates. We are *all* turning into pirates. However, it is not because digital culture is actually piracy. We are turning into pirates because there are competing legal, social, economic, and architectural determinations that are pulling us in multiple directions, and the influence of digital media is really there “in the first instance,” before any other conscious or unconscious determinants take hold. We are turning into pirates because we are told through many manners that what we believe to be proper is someone else’s property, but we are determined beforehand else wise. The medium is both affecting our messages, and it is *defining the system of conceptual possibilities that determine the boundaries of thought*. This embedded ideology of technical media suggests a reorientation, a reconsideration of the importance of media in the formation of subjectivities, opening up a different perspective and layer in the complex system by which we understand the communicative subject.

References

- Cavell R (1999) McLuhan and spatial communication. *West J Commun* 63(3):348–363. <https://doi.org/10.1080/10570319909374646>
- Foucault M (1982) *The archaeology of knowledge & the discourse on language*. 1969. Vintage, New York
- Galloway A (2013) *The interface effect*. Polity, New York, p 2012
- Gane N (2005) Radical post-humanism Friedrich Kittler and the primacy of technology. *Theory Cult Soc* 22(3):25–41
- Gunkel D (2000) We are Borg: cyborgs and the subject of communication. *Commun Theory* 10 (3):332–357
- Hall S (1996) The problem of ideology: marxism without guarantees. In: Morley D, Chen KH (eds) *Stuart Hall: critical dialogues in cultural studies*. Routledge, New York, pp 25–46
- Haraway D (1991) A cyborg manifesto. In: Simians, cyborgs, and women: the reinvention of nature. Routledge, London
- Heidegger M (1962) *Being and time* (trans: Macquarrie J and Robinson E Revised). Harper & Row, New York
- Kittler F (1995) There is no software (trans: Geoffrey Winthrop-Young). *CTheory* 10(18):1995
- Kittler F (1999) Gramophone, film, typewriter (trans: Geoffrey Winthrop-Young). Stanford University Press, Stanford
- Krippendorff K (1996) A second-order cybernetics of otherness. *Syst Res* 13(3):311–328
- Lessig L (2009) It is about time: getting our values around copyright right. Keynote presented at the EDUCAUSE 2009 annual conference, Denver, 5 Nov
- Levy S (2001) *Hackers: heroes of the computer revolution*. Penguin, London
- McLuhan M (1994) *Understanding media: the extensions of man*. The MIT Press, Cambridge
- McLuhan M, Fiore Q (2001) *The medium is the massage*. Gingko Pr, Corte Madera
- Parikka J (2012) *What is media archaeology?* Polity Press, Cambridge/Malden
- Wiener N (1965) *Cybernetics: or, control and communication in the animal and the machine*. MIT Press, Cambridge



Convergence, Internet, and Net Neutrality Policy: What the Future Holds for the Internet and Online Content

49

Kruakae Pothong

Contents

Introduction	894
Convergence, Communications Industries, and Net Neutrality	894
Implications of Convergence	897
Communications Policy Development and Trends	900
Net Neutrality Policies and the Cases of the USA, UK, and EU	904
Conclusion: What the Future Holds for the Internet and Online Content	908
References	910

Abstract

The Internet has emerged as the ultimate platform for convergence on the levels of technology, industry, and market due to its nondiscriminatory, best-effort architecture. All these levels of convergence are propelled by ideas, ideologies, and policies in a progressive and cyclical manner, bringing further technological advancement, industry, market, and policy changes. In response to convergence, net neutrality develops as a contested policy principle for regulating the relationship between Internet access providers and their users with an aim to ensure the openness of the Internet as a platform for creativity, innovation, and free expression for all. A critical analysis of the development of convergence in communications industries, policies, and global net neutrality policies, with the specific cases of the USA, EU, and UK in this chapter, projects ongoing negotiations and controversies concerning the levels of commitment to the non-discrimination principle of net neutrality. It argues that minimal commitment to or absence of the net neutrality principle will produce a future Internet that

K. Pothong (✉)
University College London, London, UK
e-mail: selene.kp@gmail.com

continues or exacerbates market concentration in both the infrastructure and content sides of the communications industries.

Keywords

Convergence · Internet · Net neutrality policy · Over-the-top (OTT) services

Introduction

Net neutrality has become a contested principle for regulating the relationship between Internet access providers (IAP) and their users – businesses and individuals. Technically, this principle prescribes a best-effort delivery of data packet across the Internet, irrespective of size or type. The intention of this policy principle is to ensure that the Internet remains an open space, free from gatekeepers, for creativity, innovation, and free expression for all.

The significance of the Internet for the modern economy, communications, and people's daily lives makes the development and renegotiation of this principle worthy of research attention. The processes to shape and reshape this policy principle as well as the implementation of the outcome will have profound impact on how online services, particularly the audiovisual content services, develop. Some of this content carries social and political welfare values for which the economic welfare values of choice and competition cannot substitute.

This chapter critically reviews the development of convergence in communications industries and policies, global net neutrality policies, and the specific cases of the US, EU, and UK net neutrality policymaking processes. Critical discourse analysis is applied to selected policy documents produced during the policymaking processes in these jurisdictions. A critical analysis of these developments and policy documents reveals a future Internet that can contribute to further market concentration in the communications industries in both the infrastructure and content areas.

Convergence, Communications Industries, and Net Neutrality

Existing net neutrality literature (Yoo 2005; Sidak 2006; Cave and Crocioni 2007; Lee and Wu 2009; Marsden 2010; Powell and Cooper 2011; Economides 2011; Michalis 2014; Leal 2014; Marsden 2017) highlights an interrelationship between the Internet as a distribution infrastructure and content as well as the increasingly obscure distinction between sector-specific policies and regulations for communication infrastructure and content. In policy debates and development processes, the Internet is cast as the ultimate platform for the convergence of technology, businesses, and services.

Convergence, according to Parsons (2003, p. 2), Golding (2000, p. 179), and Iosifidis (2011, pp. 170–71), is a cyclical and progressive phenomenon resulting from a convolution of technological advances and organizational changes of private

entities in search of new businesses and revenues. Such changes are driven and enabled by ideas and ideologies. According to McChesney (2000, p. 6), Iosifidis (2011, p. 8), and Michalis (2014, p. 17), the most influential ideology at play in the communications industries is neoliberalism. This ideology advocates free markets and prioritizes competition as a means to keep a balance between supply and demand for products and services with no or limited state intervention (Crouch 2011, p. 17). The adoption of neoliberal ideology has resulted in waves of deregulation, liberalization, and marketization which, according to McChesney (2000, p. 6) and Hesmondhalgh (2007, p. 110), highlight processes to reduce interference from nonmarket institutions in private operation, product and service provision, and a relaxation of constraints on private activities. It has also led to a shift in the focus of the communications' regulatory objective of public interest from social equity to market efficiency and reduced support for public service broadcasting (Iosifidis 2011, pp. 70–72).

In the context of communications industries, convergence is conceptualized by Lax (2009) and Iosifidis (2011) as the coming together of technologies, media, communications services, and industries and is observable on three levels: technology, industry or organization, and market or culture forms. Iosifidis (2011, p. 180) adds production as another level at which convergence takes place in order to capture the change it brings to the relationship between producers or publishers and users, referring to it as "publisher-user."

At the technology level, Lax (2009, p. 170) deems that digital technology is the driver and enabler of convergence. Such technology refers to an electronic system that generates, records, processes, receives, and transmits or displays information represented in discrete values within a specific range, removing the fundamental differences between types of data (e.g., images, text, and sound). Convergence of this computing system and telecommunications technology (such as Internet protocols: a system for transmitting datagrams among various end points across the network) means data in any form can be exchanged on any distribution platform.

Technological convergence at the heart of the net neutrality debate is the integration of computing, telecommunications, and media, enabling distribution of any media form via any infrastructure and production of multifunctional viewing devices (e.g., televisions, mobile handsets, tablets, and computers). This level of convergence highlights a technical and commercial interrelationship between transmission infrastructure and content. According to Noam (2008, pp. 20–21, 30), the transmission infrastructure sets limits on the latter. This relationship forms the basis of the net neutrality policy debate and policies.

Industry (Iosifidis 2011, p. 174) or corporate (Lax 2009, pp. 170–72) convergence refers to changes in organizational structure to improve efficiency and competitiveness in private provision of communications services. This level of convergence is observed in horizontal and vertical mergers of businesses providing products and services within the same (and across) production processes. Such structural change allows businesses to exploit the benefits and opportunities presented by technological advances and convergence through provision of a wider

range of communications services (Iosifidis 2011, p. 175). Examples of such structural changes are the 2000 vertical merger of Time Warner (audiovisual content production) and AOL (distribution network), the 2005 British satellite broadcaster (BskyB) acquisition of Easynet (a broadband provider), the 2011 Comcast (cable network) acquisition of NBC Universal (broadcaster), the 2013 Virgin Media take-over by Liberty Global, and the 2017 Verizon (telecom) buyout of AOL and Yahoo (a web service provider).

Academics (Murdock 1990; Iosifidis 2011) have observed that the trends for industry convergence intensified following the adoption of neoliberal ideology which resulted in waves of deregulation and liberalization of the communications sector in the 1980s and which became more prominent in the 1990s. Evidence of neoliberal communications policies and regulations that enabled industry convergence includes (1) the Title III US Telecommunications Act 1996 allowing cable operators to provide telephony service and allowing phone companies to provide audiovisual service; (2) the UK Cable and Broadcasting Act 1984, allowing cable companies to provide telecommunications services, breaking down the duopoly in the telecom market; (3) the UK Broadcasting Act 1990, allowing telecom operators to offer broadcasting services; (4) the UK Communications Act 2003, allowing for cross-media ownership; and (5) the EU revised 2009 Electronic Communications Framework, enabling horizontal and vertical integration in communications enterprises.

The influence of neoliberal ideology on communications policies and convergence discussed here emphasizes the cyclical relationships between ideology, policy, technology, and industrial changes that also affect markets. Neoliberal ideology continues to dominate communications policies and regulations. The application of critical discourse analysis of the selected policy documents produced during the net neutrality policymaking processes in the USA, UK, and EU indicates that the dominance of this ideology serves as a bias that policy actors can mobilize to favor their preferred policy options. The other social and political welfare values are subject to economic representation or qualification.

Market (Iosifidis 2011, p. 180) or culture forms (Lax 2009, p. 172) convergence is seen in the integration of communications product and service provision following the combination of technological and industrial convergence whereby the former acts as an enabler and the latter serves as a strategy for economic gain. According to Henten et al. (2002, pp. 14–18), this level of convergence includes provision of the same content across various technical platforms, such as the Internet, telecom networks, and traditional broadcasting channels and the integration of broadcasting telecom and broadcasting services and of IT and broadcasting services.

Examples of such products and services include Internet radio, Internet-delivered broadcast content or Internet TV, video on demand (VoD) services, the new BT TV and broadband bundle (comprising fiber broadband, pay-TV, telephone services, and add-on options of over-the-top (OTT) service such as Netflix), Sky's triple-play services (comprising satellite broadband, pay-TV, and telephone services), and Virgin Media's quadruple-play services (with cable broadband, pay-TV, telephone, and mobile services). This level of convergence demonstrates business attempts

to capitalize on the economy of scope and scale that technological convergence offers. Such practices continue to drive further technological developments to increase more efficient digital processing and transmission of content. Products of these developments include mp3, WMA, and MPEG-4 for audio and MOV, AVI, WMV, MPEG-4, M4V, and FLV for video.

The convergence of “publisher-user” (Iosifidis 2011, p. 180) includes the thriving trend of production and distribution of user-generated content through platforms such as *YouTube* and other social media networks. This level of convergence is supported by technological advances and convergence. It transforms the relationship between media producers, providers of soft technology or platforms (such as Google), and individual users who used to be passive audiences.

Implications of Convergence

A discussion of convergence at all levels demonstrates that it is propelled by ideas, ideologies, and policies even as it drives further changes in the communications sectors. This cyclical and progressive phenomenon has implications for citizens as users, the market, infrastructure, and technological development. These changes and implications result in further policy evolution and regulatory reform. The introduction and development of net neutrality policies worldwide serve as examples of such evolution.

For citizens as users, convergences have both positive and negative implications. The positive implications for users are noted, for example, by the work of Nieminen (2009) and Coleman and Blumler (2009). Their research discusses the democratizing and empowering potential of the Internet, which itself is a product of the convergence of computing and telecommunications. Reflecting technological optimism and an idealistic view of convergence, Nieminen (2009, pp. 40–41) highlights the Internet’s potential to recreate (a) the public sphere and (b) conditions and space for reason-based expression of public opinion, a result of the abundance of information sources and the ability to interact with and share information with others. Coleman and Blumler (2009, p. 9) recognize the potential of the Internet, particularly its interactive feature, to “improve public communications and enrich democracy,” but remark that such potential is “vulnerable” mainly because the key driver for Internet development is increasingly commerce as opposed to citizenship promotion.

Baker (2002), Castells (2007), and Iosifidis (2011) argue that the abundance of communications channels and information does not guarantee the quality of communications and information befitting Nieminen’s optimism about the democratizing and empowering features of the Internet (Nieminen 2009). In fact, Edward Snowden’s exposure of the systematic mass surveillance program, *Prism*, highlights the abuse of technology advances and convergence of computing and telecommunications as well as the underside of the covert market, all to the detriment of citizen privacy. Despite such scepticisms, a review of the net neutrality literature shows that continuation of Internet support for information abundance and nondiscriminatory access of users to information remains desirable and is central to the net neutrality

policy debate. A critical discourse analysis of the selected net neutrality policy documents indicates that these values are discussed in terms of innovation, choice, and diversity of content and services available on the Internet.

For the market and consumers, technological, industrial, and market convergence can be seen in both positive and negative lights. The key benefits of convergence, according to Anderson (2009a, b), Downes (2009), and Jarvis (2009), are in the solutions to limited distribution channels, spectrum, and storage space that digital technology and the Internet promise. These solutions, the theorists suggest, have resulted in an age of abundance and new business models and consumer behaviors that challenge monopoly or oligopoly control over communications, particularly content supply and innovation.

However, such optimism concerning digital technology, the Internet, and the digital economy is not shared by all. Garnham (1990), Freedman (2012), and Mansell (2012) argue that the solutions to physical scarcity promised by digital technology and the Internet as projected by Anderson (2009a, b), Downes (2009), and Jarvis (2009) do not necessarily end monopoly, gatekeeping control, or market concentration in the creative industries. Garnham (1990, p. 160) asserts that production costs (or innovation), which are greater than distribution costs, remain even when the distribution costs fall to a near-zero sum because of the digital technology and the Internet. Doyle (2002) contends that the characteristics of the creative and other branches of the communications industry deriving from economies of scale and scope result in a tendency to market concentration. Concurring with Doyle (2002), McChesney (2005), Iosifidis (2011), Freedman (2012), and Mansell (2012) observed the increasing trend of mergers and acquisitions within the same and cross-communications sub-sectors.

Such corporate convergence trend for industry contributes to, if not intensifies, market concentration. According to McChesney (2005) and Castells (2007), market concentration compromises competition and business incentives to continue creating new products and services. This condition also restricts consumer choice and risks excluding content that is good for the public but falls outside the range of what the market deems profitable to produce. Choice, diversity of content, and public good constitute the values that Van Cuilenburg and McQuail (2003) deemed as constituents of public interest, which have been the core values for regulation in both telecom and broadcasting. The inefficiency of the market mechanism to provide for content services that are good for the public but fall short of popular favor forms one of the key economic arguments in support of net neutrality as a principle for regulating the relationship between providers of distribution infrastructure and content. It also highlights the ideological dilemma in regulating the convergence of telecom and broadcasting.

While convergence at the industry level introduces competing priorities to the existing sector-specific policies of telecom and broadcasting that have become increasingly intertwined, the convergence at the technological and market levels contributes a functional dilemma to policy and regulation. This aspect of such dilemma sparked the net neutrality debate which centers on provision and management of broadband Internet access services. One of the classic arguments against the

principle of net neutrality is network or bandwidth scarcity. This argument is used to justify charging content providers for accessing end users or an audience in addition to what they have already paid to make their content available online.

The availability of and access to IP delivered communications, content, and services online results from the convergence of computing, telecommunications, broadcasting, and communications services. The products of such service convergence taking place on the Internet include online gaming, voice over IP (VoIP), video calling, web, email and data, file sharing, and Internet video (OECD 2015). Of these services, Internet video streaming and downloads account for a larger share of bandwidth and are expected to grow to over 81% of all consumer Internet traffic by 2021 (Cisco 2017). This service development implies that the Internet is becoming another form of broadcasting distribution channel. Such broadcast content services are threatening to overwhelm the Internet network, highlighting the imbalance between virtually static supply and spiraling demands for bandwidth. The consequence of this imbalance between supply and demand – bandwidth scarcity – constitutes the IAPs claim for the need to diversify revenue streams from their existing networks to create incentives for further network investment.

However, as Marsden (2017, pp. 81–83) observes, the spiraling demands for bandwidth may not be the actual reason for IAPs to abolish net neutrality to offer guaranteed quality of content delivery service across the Internet for extra pay. It could simply be the conflict of interest between IAPs and content providers in offering communications, broadcasting, and other content services over the Internet. The interest of IAPs in diversifying their revenues by offering other communication and content services in competition with content providers, according to Garnham (2011), results from the waning cross-subsidy model from business for domestic use to support broadband infrastructure investment.

This cross-subsidy model is rendered problematic because businesses generate much lower IP traffic and thus spend less on IP network services, while domestic use continuously generates more IP traffic yet brings in much less revenue to broadband providers than business users. According to Cisco's Global IP traffic report (2017), the consumer sector has always been the key driver of IP traffic, more so than the business sector. Under such circumstances, IAPs now have both the means and the incentives to provide content over their networks or charge content providers (business users) for access to their viewers. These IAPs incentives are mainly found in increasing their return on investment. Such incentives conflict with the interests of content providers in maximizing their economy of scale and scope through expansion of their content outlets.

This conflict of interest between providers of interdependent services (telecom and content) due to convergence is the basis for polarized arguments for and against the net neutrality principle and regulatory oversight. For example, net neutrality proponents argue that discriminatory Internet access through price and non-price mechanisms may incur too much cost for content providers to offer services, resulting in them exiting the market (Lee and Wu 2009; Economides 2011). They therefore deem that regulation is needed to guard against the detriment of such discriminatory access. Yoo (2005) and Sidak (2006), on the other hand, advocate

network diversity or flexibility for broadband providers to provide discriminatory access or manage traffic across their networks and deem that regulation and the net neutrality principle risk jeopardizing future network upgrade investment and innovation.

The relationship between convergence and net neutrality policy debate and problems discussed in this section emphasizes the cyclical nature of ideology, policy evolution, technology, and market changes. These elements form parts of the structural factors that shape net neutrality policies. The competing interests of stakeholders involved in the convergence of broadcasting and telecommunications further complicate the policymaking process, constituting a political dilemma.

Communications Policy Development and Trends

Net neutrality is a good example of the needed policy response to convergence. The complication in inscribing this contested principle into policies and regulations underlines the difficulties in changing the classification of the subject for oversight – Internet access service – and the priorities of policy objectives. Given this complication, it is necessary to review the development of existing communications policies and trends in order to appreciate the challenges in net neutrality policy development and the trajectories of this policy principle. The review focuses on the cases of the USA, UK, and EU where the development of net neutrality policy has been extensive.

Since net neutrality is a policy principle for managing the relationship between IAPs and their users applied to providers of Internet access service, how such service is classified determines how it can be regulated and moved toward which objectives. According to Aufderheide (1999), Van Cuilenburg and McQuail (2003), Iosifidis (2011), and Michalis (2014), communications policy comprises two interconnected aspects of distribution infrastructure or carrier (e.g., telephone, telegraph, cable, and satellite) and content (e.g., voice, images, text, and audiovisual). Internet access is a service built on physical telecommunications infrastructure. However, it is not always treated as a telecommunications service and consequently cannot always be subject to common carriage rules. As will be demonstrated later in the US net neutrality saga, the differences in legal treatments of the Internet access complicate net neutrality policymaking.

The other challenges in the development and implementation of the net neutrality policies as responses to convergence lie in the competing priorities of the criteria for a traditional communications policy objective and how the objective is interpreted. Van Cuilenburg and McQuail (2003) and Iosifidis (2011) observe that both aspects of communications have been regulated toward a common goal of public interest. However, the term “public interest” is interpreted and used differently across jurisdictions and time, depending on political, social, technological, economic contexts and communications sub-sectors.

Van Cuilenburg and McQuail (2003, p. 184) identify three broad objectives of public interest, as defined by McQuail (1992, p. 3), to be benefits that extend beyond

individual interests. These include political welfare (e.g., democracy and freedom of communication and free speech), social welfare (e.g., social and cultural benefits), and economic welfare (e.g., innovation, employment, investment, and profit or revenue). Iosifidis (2011, p. 27) defines public interest based on McQuail's concept as "collective cultural, political, social and information benefits to society, which serve both the democratic process of political participation and cultural, social and economic well-being." The definition and objectives of public interests form part of the structural factors that shape existing communications policies and contribute to the dilemma in policy response to convergence observed in the development of net neutrality policies, particularly in the selected cases.

To serve the public interest, the sector-specific regulatory criteria for telecommunications and content are similar on both sides of the Atlantic. For the telecommunications sector, the common regulatory criteria observed by Garnham (1996), Aufderheide (1999), Michalis (2007), and Iosifidis (2011) comprise universal service, nondiscrimination and fair, and equitable access to the infrastructure at a reasonable and affordable price. The shared core regulatory criteria for media according to these authors are (1) structural regulation of ownership and control to ensure plurality of sources and (2) content regulation to ensure balance and variety of program type for a range of audiences, including minorities and people with special needs.

These regulatory criteria, Garnham (1996) observes, highlight the different emphases placed on the values of the two sectors. For telecom, regulatory criteria prioritize economic values, although these values also contribute to social welfare values. The media regulatory criteria, on the other hand, focus more on social and political values. The challenges presented by convergence of telecommunications service and broadcasting to the development of policy responses lie in the inadequacy of the economic criteria to fully deliver all the social and cultural benefits of communications. These challenges become even more taxing when there are demands for policies to manage the provision of a telecommunications service, i.e., the Internet access, to stretch to accommodate social and political values, which are the policy priorities of the content carried across the Internet network. These challenges are reflected in the net neutrality policy development processes and discourse.

The communications policy precedents that shape the development of net neutrality policies across both sides of the Atlantic date back to the pre-Internet period. The key difference between European and US communications policies, according to Van Cuilenburg and McQuail (2003) and Michalis (2007), is rooted in the different foundations for communications provisions in these regions. European communications services were originally provided by the state, while in the USA such services have always been in the private sector. During the 1940s and 1960s, Europe's communications provision was influenced by Keynesianism, which encouraged state intervention as a tool for generating productivity and viewed telecommunications and broadcasting as public services "to be produced and distributed by institutions" (Michalis 2007, p. 34).

US communications services started under the influence of corporate liberalism, which fostered large and stable industries (Aufderheide 1999, pp. 14–18). Under

corporate liberalism, the state's role is limited to imposing service obligations such as universal service. This approach, ironically, resulted in a monopoly provision of telecom and broadcasting services by private entities. Despite the differences in their origin, both telecom and broadcasting services in Europe and the USA have been heavily regulated for access and universal service (Van Cuilenburg and McQuail 2003, p. 191).

The different regulatory beginnings in Europe and the USA have resulted in varying degrees and rates of market development and deregulation. Such variances resulted in different perceptions of policy problems underpinning the net neutrality policy debates and solutions. These cases, given their extremely different origins, provide a general explanation for communications policy development that is transferable to other cases sharing similar beginnings and circumstances.

The historical records of Aufderheide (1999) and Michalis (2007) demonstrate a shift in communications policies on both sides of the Atlantic following the emergence of neoliberalism in 1960s as an alternative to the European Keynesian economic approach and the US "New Deal" program, which emphasizes equity. The authors also highlight the emergence of political awareness of technological advances in the field of electronics and its economic potential. The ideological change has resulted in a shift in communications policy and regulatory objectives away from monopoly toward free-market competition. Political awareness of the importance of technology to the economy matured and diverted European and American policymakers' attention to information and communication technology (ICT) (Michalis 2007, p. 102).

Despite similar changes and trends toward the objective of competition for communications policy and regulation on both sides of the Atlantic, Feintuck (2004, p. 24) notes a more drastic approach in the USA, giving a "near exclusive emphasis" to private interests, which has resulted in "failure to serve the public interest." Europe and the UK, on the other hand, take a more reserved approach to the free market. This is observable in the continuation of European PSB, with the UK PSB doing exceptionally well according to Iosifidis (2011). The saliency of the UK PSB is evident in its domination of channel share in all homes between 1982 and 2012 and in its share in multichannel homes in 2011–2012 (Ofcom 2014, pp. 186, 200). These ideology and policy changes have contributed to varying speeds and degrees in progression of convergence, resulting in further technological, market, and policy changes.

Another shift in communications policy and regulation arrived following the commercialization of the Internet, a product of technological convergence between computing and telecommunications. Its technical capacity suggests further convergence at all levels, enabling access to telecommunications and broadcasting services and multiple content forms. With this technical capacity, backed by policies that support corporate and service convergence, the Internet realizes its potential as the ultimate convergent communication platform in the way that cable TV networks could have. Such result further transforms the communications landscape. Following this development, convergence has become an important trend in the communications industry as well as policies. Competition remains the central

objective for this wave of policy evolution toward policy convergence and is increasingly relied upon as a measure for communications service provision oversight.

The US Telecommunications Act 1996 provides both telecommunications and broadcasting regulations and serves as an example of convergent communications policy and regulation. Title I of the Act requires local phone companies to unbundle their networks or to resell their services at wholesale rates or in piecemeal to allow new entrants to the market and promote competition at the retail market level (Aufderheide 1999, pp. 61–79). Title III permits cross-sector service provision, allowing cable operators to provide telephony services and phone companies to supply audiovisual services (*ibid.*). These provisions, according to Aufderheide (1999), target competition and consumer choice promotion and suggest that both values constitute public interest. Provisions under Title II suggest a benefit for facilities-based competition in telecommunications and an intention to further break down possible monopolies in the telecom market. However, the relaxation of media ownership restrictions resulted in more industry consolidation.

Similar trends for convergent policies have been observed at the EU level and in the UK. During the first half of the 1990s, EU communications policy emphasized liberalization of the European telecommunications market, while in the latter half of the 1990s, the policy shifted toward Internet as a means to boost economic growth and competition with the USA (Michalis 2007, p. 193). According to Michalis (2007, pp. 191–215), policies for both the telecom and broadcasting branches of communications have also shifted to competition as a means to facilitate harmonized regulations across all technology platforms in Europe.

Examples of policies and regulations in this period include the Local Loop Unbundling (LLU) regulation (2000) and the 2002 EU Electronic Communications framework. The LLU regulation requires telecom operators to open their network infrastructure to competitors, allowing them to install new equipment (e.g., a Digital Subscriber Line or DSL) and offering competing broadband Internet service to consumers (Michalis 2007, p. 194). The 2002 EU Electronic Communications framework, which was revised and became the 2009 revised regulatory framework for electronic communications, was aimed at further liberalizing the telecom market and boosting competition and investment.

The European change in content policy is evident in the Audio-Visual Media Services Directive (European Parliament and the Council Directive 2007/65/EC), revising the 1989 Television without Frontiers Directive with an aim to stay abreast of the changes in viewing patterns due to technological advancement and convergence. The updated directive extends content regulation (e.g., protection of minors, prevention of racial hatred, and a ban on surreptitious advertising) to nonlinear audiovisual services (EUROPA 2008). However, it reserves some traditional content regulations put in place to promote media plurality and cultural diversity, which constitute the social and political welfare objectives of public interest. An example of such reservation is also observed in the endorsement of programming quotas by member countries in order to protect and promote European content.

In the UK, the trend in convergent communications policy is seen in the Broadcasting Act 1990 and the Communications Act 2003. The former allows telecom operators to offer broadcasting services, while the latter permits cross-media ownership. Both Acts support cross-sector service provision while maintaining the core policy objectives of each distinct communications sector. Reflected in both Acts is an emphasis on competition as an objective and a means to uphold economic as well as other traditional regulatory objectives, such as universal service, access, and choice.

From the Communications Act 2003, also emerges a concern that the UK regulator's (Ofcom) interpretation of its duties as prescribed by the Act indicates an inclination toward prioritization of consumer interests over citizen interests (Harvey 2006; Livingstone et al. 2007). The former refers to private interests of individuals (e.g., program or service choices); the latter refers to benefits beyond those of private interests (e.g., social, democratic, and political values attached to broadcast content (*ibid.*)). Both authors raised a concern that the emphasis on competition as a regulatory tool across both telecom and media sectors as reflected in Ofcom's interpretation of its duties may not be the most effective mechanism for supporting the regulatory objective for audiovisual production.

The communications policy evolution reviewed in this section indicates a continuous shift toward market competition as both an objective and a regulatory measure while convergence at all levels progresses. Since the commercialization of the Internet, the ultimate convergent communications platform, heavier reliance on competition as a tool to reconcile the competing regulatory criteria for the converging telecom and content industries has been observed. Despite all the changes in technology, corporate, market, and regulatory measures, communications policies demonstrate a degree of path dependency on traditional regulatory goals of public interest. Underpinning this objective are competing priorities for the values of access, universality, competition, choice plurality of sources, and diversity of media content and cultures. These competing priorities will continue to further complicate future development of net neutrality policies in response to convergence of telecom and content.

Net Neutrality Policies and the Cases of the USA, UK, and EU

Net neutrality policies emerge in response to the changes convergence and policy evolution bring to communications. A critical analysis of the net neutrality policy development processes and policy discourse in the USA, UK, and EU indicates that the competing policy priorities of the converging telecom and content sectors complicate the development of convergent policies, such as net neutrality. Adding to these competing priorities are the interconnected yet competing interests of stakeholders involved in the expansive value chain of the Internet. These interests can be classified into two groups: (1) IAPs and (2) users of broadband services, comprising businesses that rely on broadband Internet to reach their clients and individual users who rely on the Internet to access the content and services of their choice.

Net neutrality first emerged as a policy debate and development in the USA (Cave and Crocioni 2007, p. 670). Although it is technically a best-effort management principle for communications traffic, academics frame the issues debated in net neutrality policymaking as (1) a problem of consumer and media policy due to the implications of the “neutral principle” for users (Marsden 2010, p. 1); (2) a market failure problem, following drastic deregulation and liberalization of the telecom sector (Cave and Crocioni 2007); or (3) an economic and social welfare problem, resulting from a conflict of interest between broadband providers and service users (Yoo 2005; Sidak 2006; Economides 2008, 2011). The critical discourse analysis of the policy documents produced as part of the US, UK, and EU net neutrality policymaking process indicates that the economic and social welfare values embedded in the framing of the problems are used in the policy debates as justification for or against this policy principle.

In legislation and/or implementation of the net neutrality, the principle translates to varying degrees of restriction on discrimination against communications traffic exchanged over the Internet. Since its emergence in the USA, net neutrality legislation has been passed and/or implemented across countries in Latin America, Europe, and Asia. Examples of these include Chile, Brazil, Singapore, Israel, Costa Rica, Netherlands, Slovenia, Finland, the USA, and EU (Marsden 2017, p. 6). Other forms of self- and co-regulation for net neutrality have been introduced in Norway, the UK, South Korea, and Japan (*ibid.*). Both the growing numbers of jurisdictions adopting the principle of net neutrality and the ongoing challenges against the net neutrality rules in the USA highlight the persistence of and controversies around this principle for managing the convergence of telecom and content, as well as the relationship between providers of both sectors of communications services.

Although the net neutrality policy debate started in the USA and dated back to 1999, the resulting net neutrality rules continue to be challenged. The second generation of the US net neutrality rules took effect on 12th June 2015, following two of the rulemaking procedures (FCC 2009, 2014) and several failed legislative attempts. The Democrat FCC voted to reclassify Internet service as a public utility and introduced the bright line rules, banning blocking, throttling and paid-prioritization of Internet traffic on 26th February 2015 in response to the United States Court of Appeals for the District of Columbia decision on the *Verizon v FCC* (2014) 740 F.3d 623 case. The ruling on the case affirmed the FCC’s authority to regulate Internet access and upheld its decision to preserve Internet openness as well as the transparency rule, but vacated the no-blocking and no unreasonable discrimination rules, reasoning that the FCC lacked authority to subject broadband providers to common carrier rules, which prescribes non-discrimination. The litigation featured Verizon’s legal challenge of the *Rules and regulations for preserving the open Internet* that the FCC adopted on 23rd December 2010 and came into effect in 2011. In principle, the 2011 and 2015 net neutrality rules (FCC 2011, 2015) are similar in that they prescribed non-discrimination. However, the 2011 rules only applied to fixed line Internet service; wireless Internet were exempted.

Then new Republican FCC chair, Ajit Varadaraj Pai, introduced the *Restoring Internet Freedom Notice of Proposed Rulemaking* (2017) to replace the 2015 net

neutrality rules, which ban blocking, throttling and paid prioritization on both fixed and wireless or mobile broadband, with the net neutrality light touch. This proposed change presented a complete U-Turn to reinstate the classification of Internet access as information service, reversing the 2015 FCC's decision to reclassify Internet service as a public utility under Title II of the 1934 Communications. Then in December 2017, the FCC voted to repeal the 2015 net neutrality rules (Kang 2017). This decision to repeal the 2015 net neutrality rules came into effect on the 11th June 2018, rolling back the core 2015 rules: banning blocking, throttling and paid prioritization (FCC 2018). Yet again, the controversial 2018 repeal of the 2015 net neutrality rules are facing both legal and political challenges. At the time of revising this chapter, the US Appeals court in San Francisco has accepted to hear the consolidated legal challenges against the 2018 repeal of the 2015 net neutrality rules (Shepardson 2018). The U.S. Senate has voted in support of a resolution to undo the FCC's 2018 (Readon 2018).

These challenges and changes made to the net neutrality rules in the USA highlight a fierce ongoing negotiations over the levels of commitment of the regulator to the traditional common carrier regulatory criteria of nondiscrimination, highlighting the competition for control over the Internet. In this case, the legal treatment or classification of Internet access plays an important role in determining the level of commitment to the nondiscrimination principle of net neutrality. The swings in policy decisions so far are more political, as in driven mainly by commercial interests, than the actual needs. These political influences are observable in the catalysts of the policy changes, e.g., legal challenge and the change of the FCC chairman, which is a political position.

In Europe, members of the European Union are obliged by the European Communities Act (1972) to transpose EU legislation into national law. At this supranational level, the net neutrality principle was officially recognized as a broad policy and regulatory principle during the development of the 2009 revised Electronic Communications Package. Prior to the 2009 revised Electronic Communications Package, Europe's competition and regulatory framework deemed unnecessary any additional and specific provisions to guard against traffic management and discrimination due to differences in existing policies, regulations, and market structure between the USA and EU (Cave and Crocioni 2007; Chirico et al. 2007).

Similar to the US case, the principle of net neutrality has been subject to series of negotiations. However, the EU's approach to implementing net neutrality has started off and concluded as a very light touch, compared to the 2015 net neutrality rules in the USA. When net neutrality was first officially recognized, it emerged in the 2009 revised Electronic Communications Package as a policy objective. Under Article 8(4)(g) of the revised Framework Directive (European Parliament and the Council Directive 2009/140/EC), national regulatory authorities (NRAs) are obliged to "promote users' ability to access and distribute information and to run applications and services of their choice." The revised Universal Service Directive (European Parliament and the Council Directive 2009/136/EC) indicates Europe's adherence to the transparency principle and preference for a user-centric approach as a means to implement the open Internet objective. Despite such

preference, the directive allows member countries' flexibility to devise what they deem appropriate as a measure to realize the objective. In the cases of the Netherlands and Slovenia, legislation is their preferred policy measure.

As part of the ongoing policy process and pursuit of regulatory harmonization, the European commission launched further consultations related to the net neutrality principle. The first consultation, "The open Internet and net neutrality in Europe" (2010), was a broad public consultation featuring the principles of access, competition, transparency, innovation, investment, and discrimination through traffic management. Then, in 2012, the Commission launched another consultation on "Specific aspects of transparency, traffic management and switching in an Open Internet" (2012).

Following these consultations, the Commission developed the European single market proposal for electronic communications (COM (2013) 627 final) to update the 2009 revised Electronic Communications Package, popularly referred to as the Connected Continent proposal. This proposal commits to the nondiscrimination principle of net neutrality only so far as preventing IAPs from blocking or throttling specific content, applications, or services – subject to reasonable traffic management – but allows for "specialized services." The proposal passed at its first reading in the European Parliament and was amended to ban "zero rating," a form of commercial arrangement to discount own or affiliated content toward users' data consumption and clarify definition of "specialized services" (Marsden 2017, p. 131). These amendments increased the level of commitment to net neutrality principle, yet the amended proposal was watered down again as it went through further negotiations. The outcome of this legislative process, the Regulation (EU) 2015/2020, enshrines the nondiscrimination principle of net neutrality in so far as prohibiting blocking or throttling. The extent to which priority specialized service and commercial arrangements such as zero rating can be deployed remains unclear.

The outcome of the EU net neutrality legislation is not estranged to the UK's take on net neutrality. Both opted for the net neutrality lite, yet the UK chose to implement the net neutrality principle with self-regulation guided by the open Internet voluntary code of practice (BSG 2016). The development of the UK's approach and level of commitment to net neutrality is steered mainly by the minister for Culture, Communications and Creative Industries, Ed Vaizey, and the regulator (Ofcom). This approach to net neutrality faced much less challenge compared to the US's approach despitess users' complaints about blocking and throttling.

The interest in the net neutrality principle in the UK developed in 2006 in the wake of public awareness of and concerns over IAPs blocking and throttling of the BBC's iPlayer traffic, which was launched that same year (Marsden 2010, p. 99). On 24 June 2010, the UK regulator, Ofcom, issued a consultation: *Traffic management and net neutrality: A discussion document*. Emphasis was placed on traffic management or traffic discrimination, its impact on citizens and consumers, and the appropriate regulatory oversight for ensuring users' ability to access and distribute information and to run applications and services of their choice as prescribed by Article 8(4)(g) of the revised Framework Directive (European Parliament and the Council Directive 2009/140/EC). Ofcom's consultation ended with its statement

declaring its preference for self-regulation and its intention that net neutrality, or the end-to-end principle, “coexists” with other management principles (2011, p. 3).

In November 2010, Ed Vaizey, Minister of the (then) Department for Culture, Media and Sport (DCMS), gave a speech at the Financial Times World Telecoms Summit which echoed the same preference for self-regulation as a means to govern net neutrality (Vaizey 2010). The speech triggered resistance from the public as observed in the joint open letter to the minister regarding the open Internet (Lynn et al. 2010). This reaction prompted the minister to call for a roundtable discussion which led him to assign the Broadband Stakeholder Group (BSG) to facilitate the development of the open Internet voluntary code of practice with a wide range of stakeholders across the Internet value chain. The code was first published in July 2012 and has periodically been updated, with the latest update being published in 2016 (BSG 2016).

Critical discourse analysis of the code and all their updates indicates a consistent commitment to self-regulation and minimal commitment to the nondiscrimination principle of net neutrality. These include (1) access to all legal content, (2) no discrimination against content providers on a commercial rivalry basis, and (3) transparency. In line with Ofcom’s level of commitment to net neutrality, paid priority and other managed services are allowed given that providers are transparent about their service offers. In principle, this level of commitment aligns with the EU legislation for net neutrality. In practice, Ofcom will have to turn the code into some form of “formal co-regulation via statutory regulation” (Marsden 2017, p. 183) to comply with the EU legislation.

Conclusion: What the Future Holds for the Internet and Online Content

The development of the approaches to implement the net neutrality principle in the USA, UK, and EU as well as the number of nations adopting this principle confirms the observation made by Marsden (2010) that net neutrality is the reincarnation of the traditional principle for common carrier regulation. Neither this principle nor its controversies will go away due to the progressive nature of convergence and the significance of the Internet in modern society. The re-emergence of this nondiscrimination principle results from the cyclical progressive phenomenon of convergence at all levels, supported by the Internet. Given the progressive nature of convergence, market developments, competing policy priorities and interests of stakeholders, and the levels of commitment to net neutrality as a principle for regulating convergence are likely to subject to ongoing negotiations and changes.

The review of the development of communications policies and critical discourse analysis of the selected policy documents produced during net neutrality policymaking in the USA, UK, and EU indicate that there are three aspects to the dilemma in regulating convergence on the Internet. One is functional, a physical capacity problem that has sparked the net neutrality debate as a result of the

interdependence between distribution infrastructure (the Internet network) and content, including OTT services, a result of convergence. Another is ideological, as a result of neoliberalism, which emphasizes free markets despite its own limitations in optimally serving social and political welfare objectives of public interest vested in communications, particularly on the content side. The last is political, involving competing yet interdependent interests among broadband providers, individual users, content, and OTT service providers that complicate the net neutrality policymaking process. Within these aspects of the convergence regulatory dilemma and net neutrality policymaking lies a constant struggle of agency (policy actors: governments, regulators, broadband, content, and individual users) to either change or maintain the existing communications order and control over the Internet.

Given these regulatory dilemmas, consensus on the levels of commitment to the nondiscrimination principle of net neutrality is difficult to achieve and likely to be transient. As examined in this chapter, particularly in the cases of the USA, EU, and UK, the mechanism for implementing net neutrality ranges from legislation to self-regulation; the levels of commitment to the principle also vary. The greater the restrictions on the flexibility of IAPs to experiment with traffic management and associated business models, the smaller the range of these providers' revenue streams and potentially investment incentives. The greater the flexibility IAPs have to experiment with traffic management and business models, the greater the distribution and market entry costs are likely to be for content providers. Such increased distribution and market entry costs could force small content and application providers out of the market.

Academics such as Garnham (1990), Freedman (2012), and Mansell (2012) argue that the reduced distribution cost to a near-zero sum thanks to the nondiscriminatory design of the Internet does not eliminate market concentration. However, this chapter argues that the absence of or minimal commitment to nondiscriminatory access embedded in best-effort Internet traffic management will exacerbate market concentration on both the distribution infrastructure and, particularly, the content side of communications. This situation could undermine the economic, social, and political welfare objectives of public interest through reduced plurality and diversity of online content and services. Less variety and diversity of content indicate service choice for users may drop. Some of these online content and services would be forced out of the market because the concentrated market deems them commercially unprofitable to produce. Unfortunately, some of the content forced to exit the market in this way may carry "public good" value, which serves the social and political welfare objective of public interest. Free speech or freedom of communication is also at risk depending on the type and degree of traffic management and discrimination allowed, implying a social and political welfare loss.

Given the complication in both the development and implementation of the net neutrality policy principle worldwide, future research should investigate the practical implications of these varying levels of commitment to this principle in different social, economic, and political contexts. Findings from such research may help policy actors better navigate the compromises they are willing to accept and negotiate for. These practical implications can also be used to refine conditions for

provision of managed Internet access services such as zero rating and priority specialized services in the existing policy and regulations without adverse economic, social, or political welfare loss on either sides of the communications.

References

- Anderson C (2009a) Free: the future of a radical price. Random House, London
- Anderson C (2009b) The longer long tail: how endless choice is creating unlimited demand. Random House Business, London
- Aufderheide P (1999) Communications policy and the public interest: the Telecommunications Act of 1996. Guilford Press, New York
- Baker CE (2002) Media, markets, and democracy. Cambridge University Press, Cambridge
- BSG (2016) Open Internet code of practice: voluntary code of practice supporting access to open Internet and transparency of traffic management practices, from <http://www.broadbanduk.org/wp-content/uploads/2016/06/BSG-Open-Internet-Code-2016.pdf>. Accessed 3 Sept 2015
- Castells M (2007) Communication, power and counter-power in the network society. *Int J Commun* 1(1):29
- Cave M, Crocioni P (2007) [Special section on net neutrality] Does Europe need network neutrality rules? *Int J Commun* 1(1):11
- Chirico F et al (2007) Network neutrality in the EU. TILEC discussion paper no. 2007-030, from <http://papers.ssrn.com/abstract=1018326>. Accessed 5 Feb 2014
- Cisco (2017) Cisco visual networking index: forecast and methodology, 2016–2021, from <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/complete-white-paper-c11-481360.html>. Accessed 2 Sept 2017
- Coleman S, Blumler JG (2009) The Internet and democratic citizenship: theory, practice and policy. Cambridge University Press, Cambridge
- Communication from the European Commission on Proposal for a Regulation of the European Parliament and of the Council Laying Down Measures Concerning the European Single Market for Electronic Communications and to Achieve a Connected Continent, and Amending Directives 2002/20/EC, 2002/21/EC and 2002/22/EC and Regulations (EC) No 1211/2009 and (EU) No 531/2012, COM(2013) 627 final
- Crouch C (2011) The strange non-death of neo-liberalism. Polity, Cambridge
- Downes L (2009) The laws of disruption: harnessing the new forces that govern life and business in the digital age. Basic Books, New York
- Doyle G (2002) Media ownership: the economics and politics of convergence and concentration in the UK and European media. Sage, London
- Economides N (2008) Net neutrality, non-discrimination and digital distribution of content through the internet. *ISJLP* 4:209
- Economides N (2011) Broadband openness rules are fully justified by economic research. *Commun Strateg* 84(4):1–25
- EUROPA (2008) “Audiovisual media services without frontiers” Directive, from http://europa.eu/legislation_summaries/audiovisual_and_media/l24101a_en.htm. Accessed 8 Feb 2014
- European Commission (2010) Questionnaire: the public consultation on the open Internet and net neutrality in Europe. Information Society and Media Directorate General, Brussels
- European Commission (2012) On-line public consultation on “specific aspects of transparency, traffic management and switching in an open Internet.” Digital Agenda for Europe, from <https://ec.europa.eu/digital-single-market/line-public-consultation-specific-aspects-transparency-traffic-management-and-switching-open>. Accessed 8 Feb 2014
- European Communities Act (1972) from <https://www.legislation.gov.uk/ukpga/1972/68>. Accessed 22 January 2014
- European Parliament and the Council Directive 2007/65/EC of 11 December 2007 amending Council Directive 89/552/EEC on the coordination of certain provisions laid down by law,

- regulation or administrative action in Member States concerning the pursuit of television broadcasting activities
- European Parliament and of the Council Directive 2009/136/EC of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws
- European Parliament and the Council Directive 2009/140/EC of 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services
- FCC (2009) Notice of proposed rulemaking in the matter of protecting and promoting the open Internet and Broadband Industry Practices. Federal Communications Commission, Washington, DC, from <http://torrentfreak.com/static/fcc-09-93a1.pdf>. Accessed 1 June 2012
- FCC (2011) Preserving the Open Internet: Final Rule. Federal Communications Commission, Washington, DC, from <http://www.gpo.gov/fdsys/pkg/FR-2011-09-23/pdf/2011-24259.pdf>. Accessed 1 June 2013
- FCC (2014) Notice of Proposed Rulemaking in the Matter of Protecting and Promoting the Open Internet. Federal Communications Commission, Washington, DC, from http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0515/FCC-14-61A1.pdf. Accessed 13 January 2015
- FCC (2015) Protecting and promoting the open Internet. Washington, DC, from <https://www.federalregister.gov/documents/2015/04/13/2015-07841/protecting-and-promoting-the-open-internet>. Accessed 1 June 2015
- FCC (2017) Restoring Internet freedom notice of proposed rulemaking. Federal Communications Commission, Washington, DC, from <https://www.fcc.gov/document/restoring-internet-free-dom-notice-proposed-rulemaking>. Accessed 2 Sept 2012
- FCC (2018) Restoring Internet Freedom. Federal Communications Commission, Washington, DC, from <https://www.federalregister.gov/documents/2018/05/11/2018-10063/restoring-internet-free-dom>. Accessed 22 July 2018
- Feintuck M (2004) "The public interest" in regulation. Oxford University Press, Oxford
- Freedman D (2012) Web 2.0 and the death of the blockbuster economy. In: Curran J et al (eds) Misunderstanding the Internet. Routledge, London, pp 69–94
- Garnham N (1990) Media theory and the political future of mass communication. In: Capitalism and communication: global culture and the economics of information. Sage, London, pp 1–19
- Garnham N (1996) Telecommunications and audio-visual convergence: regulatory issues. Comput Law Secur Rep 12(5):284–287
- Garnham N (2011) The political economy of communication revisited. In: Wasko J et al (eds) The handbook of political economy of communications. Wiley-Blackwell, Oxford
- Golding P (2000) Forthcoming features: information and communications technologies and the sociology of the future. Sociology 34(1):165–184
- Harvey S (2006) Ofcom's first year and neoliberalism's blind spot: attacking the culture of production. Screen 47(1):91–105
- Henten A et al (2002) Some implications for regulation of ICT and media convergence. Center for Tele-Information, Technical University of Denmark, from <http://www.ictregulationtoolkit.org/En/Document.1471.pdf>. Accessed 8 Feb 2015
- Hesmondhalgh D (2007) The cultural industries, 2nd edn. Sage, London
- Iosifidis P (2011) Global media and communication policy. Palgrave Macmillan, New York
- Jarvis J (2009) What would Google do?: reverse-engineering the fastest growing company in the history of the world. Harper Business, New York
- Kang C (2017) F.C.C. Repeals Net Neutrality Rules, from <https://www.nytimes.com/2017/12/14/technology/net-neutrality-repeal-vote.html>. Accessed 22 July 2018
- Lax S (2009) Media and communications technologies: a critical introduction. Palgrave Macmillan, Basingstoke

- Leal MC (2014) The EU approach to net neutrality: network operators and over-the-top players, friends or foes? *Comput Law Secur Rev* 30(5):506–520
- Lee RS, Wu T (2009) Subsidizing creativity through network design: zero-pricing and net neutrality. *J Econ Perspect* 23(3):61–76
- Livingstone S, Lunt P, Miller L (2007) Citizens and consumers: discursive debates during and after the Communications Act 2003. *Media Cult Soc* 29(4):613–638
- Lynn J et al (2010) Open rights group – joint letter to Ed Vaizey: open Internet. Open Rights Group, from <https://www.openrightsgroup.org/ourwork/reports/joint-letter-to-ed-vaizey-open-internet>. Accessed 31 Mar 2015
- Mansell R (2012) Imagining the Internet: communication, innovation, and governance. Oxford University Press, Oxford
- Marsden CT (2010) Net neutrality: towards a co-regulatory solution. Bloomsbury Academic, London
- Marsden CT (2017) Network neutrality: from policy to law to regulation. Manchester University Press, Manchester
- McChesney RW (2000) Rich media, poor democracy: communication politics in dubious times. The New Press, New York
- McChesney RW (2005) The new global media. In: Bucy EP (ed) Living in the information age: a new media reader. Wadsworth Publ. Co, Belmont
- McQuail D (1992) Media performance: mass communication and the public interest. Sage, London
- Michalis M (2007) Governing European communications: from unification to coordination. Lexington Books, Plymouth
- Michalis M (2014) Infrastructure as a content issue and the convergence between television and broadband Internet: insights from the British market. *Int J Digit Telev* 5(1):75–90
- Murdock G (1990) Redrawing the map of the communications industries: concentration and ownership in the era of privatization. In: Public Communication. Sage, London
- Nieminen H (2009) Media in crisis? Social, economic and epistemic dimensions. In: Communicative approaches to politics and ethics in Europe. Tartu University Press, Estonia, pp 31–43
- Noam EM (2008) If fiber is the medium, what is the message? Next-generation content for next-generation networks. *Commun Strateg*, Special Issue, 19–34
- OECD (2015) OECD digital economy outlook 2015. Organisation for Economic Co-operation and Development, Paris, from <http://ec.europa.eu/eurostat/documents/42577/322224/Digital+economy+outlook+2015/>. Accessed 3 Sept 2015
- Ofcom (2010) Traffic management and “net neutrality”: a discussion document. From <http://stakeholders.ofcom.org.uk/binaries/consultations/net-neutrality/summary/netneutrality.pdf>. Accessed 14 Mar 2012
- Ofcom (2011) Ofcom’s approach to net neutrality, from <http://stakeholders.ofcom.org.uk/binaries/consultations/net-neutrality/statement/statement.pdf>. Accessed 14 Mar 2015
- Ofcom (2014) Communications market report, from http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr14/2014_UK_CMR.pdf. Accessed 14 Mar 2015
- Parsons P (2003) The evolution of the cable-satellite distribution system. *J Broadcast Electron Media* 47(1):1–17
- Powell A, Cooper A (2011) Net neutrality discourses: comparing advocacy and regulatory arguments in the United States and the United Kingdom. *Inf Soc* 27(5):311–325
- Readon M (2018) Senate Democrats score big win in fight to preserve net neutrality rules, from <https://www.cnet.com/news/senate-democrats-win-significant-victory-to-preserve-net-neutralit>y-rules. Accessed 22 July 2018
- Regulation (EU) 2015/2120 of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users’ rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, OJ L301/1,6 November 2015

- Shepardson D (2018) U.S. appeals court in San Francisco will hear net neutrality appeal, from <https://www.reuters.com/article/us-usa-internet/u-s-appeals-court-in-san-francisco-will-hear-net-neutrality-appeal-idUSKCN1GK380>. Accessed 22 July 2018
- Sidak JG (2006) A consumer-welfare approach to network neutrality regulation of the Internet. *J Compet Law Econ* 2(3):349–474
- Vaizey E (2010) The open internet – oral statements to parliament, from <https://www.gov.uk/government/speeches/the-open-internet>. Accessed 26 June 2014
- Van Cuilenburg J, McQuail D (2003) Media policy paradigm shifts towards a new communications policy paradigm. *Eur J Commun* 18(2):181–207
- Verizon v FCC (2014) 740 F.3d 623, from <http://uk.westlaw.com>. Accessed 20 November 2014
- Yoo CS (2005) Beyond network neutrality. *Harv J Law Tech* 19:1



Affective Flux of Feminist Digital Collectives, or What Happened to the Women's March of 2017

50

Christina Riley

Contents

Theories of Flesh and Machine	917
The Network Society and Social Change	918
Cyberfeminism and the Third Wave	920
The Women's March of 2017, the Fractured Mass	922
The "Real" Trump Effect	924
Oh, Audrey	925
January 21, 2017, and Beyond	930
Appendix	932
References	933

Abstract

The Women's March of 2017 was an event that was, in its inception, envisioned as a massive collective effort that would engender a wider social movement working to enhance women's rights during the age of Trump. As a march, it was successful. As a movement, perhaps not. And why? I am interested in using the Women's March as a case example of the difficulties that feminist online collective efforts face via their digital dependency. Undoubtedly, much critical work has been devoted to praising the boggling speed and scale of digital activisms in their online inception. This functions impressively as a mechanism to gather group sentiment and locate it within a certain locale, be it an organization, page, physical space, etc. However, due to the exponentialized outgrowth of such networked events, organizers must match this breakneck massification with concretized planning, strategy, and goals. This is quite difficult when widespread affective responses register within a populace and transfer instantly online. But to engineer a precalculated praxis feels awfully close to fascism. Further,

C. Riley (✉)

Women and Gender Studies, George Mason University, Washington, DC, USA
e-mail: criley11@masonlive.gmu.edu

complications arise via the nature of such communicative technologies; fractures among the group are inevitable in the neoliberalized terrain of what Jodi Dean refers to as communicative capitalism. The seduction and ease of self assertion via social media channels may be productive as an evolving online social organism but nonetheless becomes difficult to address and maintain from an organizational standpoint. I will initially move through foundational media theorists such as Bernard Stiegler and Frederich Kittler to illustrate the ways in which cultural formations are imbricated within technologies (or technics) while then utilizing the work of Manuel Castells and Jodi Dean as well as technofeminist theory to interpolate the cultural implications of our technological embeddedness. A close reading of the Women's March specifically focusing on the analysis of their infamous Facebook "Diversity Statement" posting and online commentary will be utilized to perform an affective analysis of the online movement. By doing so, I hope to gain a more comprehensive understanding of that which compels and complicates online collectivity, and as Stiegler notes, affect provides great insight into such processes of becoming.

Keywords

Affect · Women's March 2017 · Collective · New media · Intersectionality · Solidarity

The Women's March of 2017 was an event that was, in its inception, envisioned as a massive collective effort that would engender a wider social movement working to enhance women's rights during the age of Trump. As a march, it was successful. As a movement, perhaps not. And why? I am interested in using the Women's March of 2017 as a case example of the difficulties that feminist online collective efforts face via their digital dependency. Undoubtedly, much critical work has been devoted to praising the boggling speed and scale of digital activism in their online inception. This functions as a mechanism to gather group sentiment and locate it within a certain space, be it an organization, web page, or physical space. However, due to the exponentialized outgrowth of such networked events, organizers must match this breakneck massification with concretized planning, strategy, and goals. This is quite difficult when widespread affective responses register within a populace and transfer instantly online. But to engineer a precalculated praxis feels awfully close to fascism. Further, complications undoubtedly arise via the nature of such communicative technologies: fractures among the group are inevitable in the neoliberalized terrain of what Jodi Dean refers to as communicative capitalism. The seduction and ease of self-assertion via social media channels may be productive as an evolving online social organism but nonetheless becomes difficult to address and maintain from an organizational standpoint.

A direct result of such hasty organizational response produced fractures which may be summarized as a general lack of a focused collective aim and poorly executed attempts at inclusivity. Due to the reliance on quantification that digital technologies provide, online social efforts fall victim to the logic of a digital

economy. I will initially move through foundational media theorists such as Bernard Stiegler and Frederich Kittler to illustrate the ways in which cultural formations are imbricated within technologies (or *technics*) while then utilizing the work of Manuel Castells and Jodi Dean as well as techno-feminist theory to interpolate the cultural implications of our technological embeddedness. A close reading of the Women's March of 2017, specifically focusing on the analysis of their infamous Facebook "Diversity Statement" posting and online commentary, will be utilized to perform an affective analysis of the online movement. By doing so, I hope to gain a more comprehensive understanding of that which compels and complicates online collectivity, and affect provides great insight into such processes of becoming. For full transparency, I must note that not only was I an early "online" attendee of the said march, but I attended the "mother" march in DC as well as the organization's post-march programmatic.

Theories of Flesh and Machine

Before directly analyzing the Women's March of 2017, I would first like to provide a brief overview of several theorists who prove particularly insightful to this case study- new media scholars Bernard Stiegler and Manuel Castells, Marxist theorist Jodi Dean as well as the work of cyberfeminists, specifically Donna Haraway.

An apt beginning for understanding media technologies' sociocultural influence would begin with Friedrich Kittler. *Gramophone, Film and Typewriter* explores media's relation to the human body. Kittler asserts that medias spring from the human and then attempt to reproduce the human mechanically, digitally. Once such representation occurs, it may then be stored and quantified; Kittler calls this process time-axis manipulation. Using Lacanian concepts such as the Real, Kittler exemplifies this process initially in the gramophone; sound proliferates at low frequencies and is easily captured. As it collapses into a single data point, it may be captured via its slow sequencing and mathematically charted and stored. This makes sound so easily manipulable. Such a process, Kittler argues, makes the human indistinct from the machine. What Kittler finds disconcerting about computers is the lack of human involvement needed in the translation process. To illustrate this point, he points to how Godel's logic quantified language by numerically representing logical statements. This mathematical innovation was then utilized by Alan Turing to create simplified language which could be translated mechanically, eventually evolving into the modern-day computer. Semiotic transcription and translation could now exist independent of the human.

Bernard Stiegler, working from a post-Marxist framework, also attempted to chart the metaphysical and historiographical ways in which humans and technologies were interconnected. In a Nietzschean sense, Stiegler asserted that death drives us, and in an attempt to mark our worlds, we create language, archives, and technologies of storage. We move through a process of inheritance and transmission, for Stiegler's understanding of epigenetics is that which exists outside of our genetic memory yet encompasses our collective cultural advancements: our tools, artifacts, and ideas.

Working off Heideggerian concepts of Dasien (the “already there”), Stiegler asserts that technological memory or epiphylogenesis composes a third structuration of existence which includes language, technics (Grecian notion of skill or craft), technique, and technology which all work to capture, translate, and transcend our materiality. In this way, the “logic of innovation is properly that of the evolution of the technical system itself” (39). We are led, in essence, by our technologies. Stiegler’s notion of prosthetics stands in contrast to Derridean *difference* in that the break from that which was already there, or prosthesis, creates the human. There was no originary point; our access to the past is mediated through our tools which become our culture. Like Kittler, Stiegler defines culture as technology. Prosthetics work to grammaticalize (store) our culture.

Thus, for Stiegler, there is no pure innovation, yet there is a desire to individuate. New technologies are integral to this process of asserting the individual which lie in contrast to the mass medias of advertising, film, and television which took away the voice (and dialogic process) of the individual (1998, 37). Social media enables the exposition and individuation of group psyche and affect. Despite the narcissism perpetuated through this process of constant self-assertion, Stiegler believes that the individual’s engagement with such technologies of the self may work toward a counter-hegemonic politics, for “...new ubiquitous digital networks operating as new technical associated milieus have fundamental effects for symbolic and psychological associated milieus, and thus for new ways of being” (2009, 1).

This desire to differentiate one’s identity within a broader network of individuals creates a destabilization of the greater group- they are less easily managed, tracked. The volatility of these new networks of digitized identities can produce a counter-politics of spontaneity with unpredictable intentions, directions. Most integral to the Women’s March of 2017 case study is how this process of digital collectivity produces what Stiegler may consider as a networked technologies of the self.

The Network Society and Social Change

Also fascinated by the innovative terrain of digital environs, Manuel Castells wrote of these networked clusters of individuals in his first installment of his network systems trilogy, *The Rise of the Network Society*. Castells asserts that our current societal state is transitioning from an age of industry to one of information; the result of this is the creation of new tools for communication and biological technologies. Thus, ITCs enable globalization by determining physical space as useless to economic productivity. In this way, power, rather than resting in regimes and industry, is found in the network systems though the contributors to the network don’t necessarily garner power themselves – it is derived from the rationale or *focus* of the network (105). Hardt and Negri’s pivotal text, *Multitude: War and Democracy in the Age of Empire*, echoes and expands on Castell’s assertion that the network society ushers forth a time for enhanced democratization. Hardt and Negri find greater opportunities for equality and freedom encompassed within the notion of the “collectivist” impulses of the digital world; they call this the democracy of the multitude.

A certain logic of resistance becomes possible, for the very tenants of democracy allow for diversity of goals and practices which, as Castells noted, is enabled by the open-source nature of the net itself. Democracy of the multitude then becomes a potential tool for revolution in the network system, creating new channels for collective power assemblage and organization.

Castells' *Networks of Outrage and Hope: Social Movements in the Internet Age* integrates an affective framework to trace the importance of emotion in mobilizing social activists. He does a brief history of the Arab Spring, *Indignados* and Occupy movements to investigate digital cascades which inspire widespread resistances. Castells understands "affect" as akin to emotion rather than as a precognitive, corporal response. He argues that these revolutionary waves are affective in nature. He writes, "Fear is overcome by sharing and identifying with others in a process of communicative action. Then anger takes over: it leads to risk-taking behavior. When the process of communicative action induces collective action and change is enacted, the most potent positive emotion prevails: enthusiasm, which powers purposive social mobilization" (219). Technologically mediated affect then shapes the process of mobilization and thus the potential for material, social change itself. These networks are multimodal, existing on and offline, springing from pre-existing social networks and political movements (221). Castells does not deny that these collectives of resistance must return to the streets- "While these movements usually start on the Internet social networks, they become a movement by occupying the urban space, be it the standing occupation of public squares or the persistence of street demonstrations" (222). The success of these collectives resides in their ability to permeate political institutions and become adept at negotiation (235). Ultimately, the ability for horizontal digital networks to initiate protest via creating a sense of "togetherness" (225) is integral.

But is this sense of "togetherness" even possible within the current state of computer moderated environs? Castells and Hardt and Negri were writing during the utopia/dystopia of Internet's heyday where personal computers were just entering homes. To both temper and contemporize such techno-utopic response, Jodi Dean's work on communicative capitalism proves vital. Her text weds the democratizing ideals of the network to capitalist exploitation – "the ideals of democracy become realized in a material fashion so that ever more people can participate, ever more voices can be included, ever more points of politicization can emerge, ever more discussions can be held" (2013). In this process, we become more vulnerable via digital labor exploitation and easily manipulable via our reliance on digital networks. Simultaneously, we are being surveilled by governments and corporations which will use such information to construct, govern, and manage the populace. We become further entrenched within capitalist structures, disallowing our collective resistance.

Dean connects the neoliberalized individual as the key player in this digital polity. The bloated economics and rhetoric of Reagan and Thatcher instilled in their constituents an ethics of self-sufficiency which mistrusted institutions, collectives/parties, and experts. This "self-made" individual therefore legitimizes themselves via their own experience and identity. The more oppressed an individual, the more

they must combat others for recognition. Thus, identity politics becomes akin to a weapon for Dean, “It lets me insist that this time *I* will not be sacrificed, *I* will survive. Even more, it helps assuage some of the guilt of the privileged – they are on the correct side of history, for once” (2013). It shores up fragile identity in demographic categories such as sex, sexuality, race, ethnicity, and religion. Yet Marxist-inspired Dean notes that identity politics rarely considers class which is necessary for true digital revolution to occur. Dean’s *Solidarity of Strangers: Feminism after Identity Politics* understands the notion of the female “we” as that which is always in process, not fully determined and unconscious. It is an essential component of politics; identitarianism is its antithesis. Defining the “we” is something perhaps impossible; doing so encourages contestation and struggle which are productive spaces for growth and power. Exploring spaces of desire, fantasy, and affect will work to produce collective understanding and cohesion.

Digital media, and social media in particular, arguably provides such a space for new forms of collectivism. The Women’s March of 2017 began on Facebook and was able to proliferate beyond expectations. All of the above new media theorists – from Stiegler to Castells to Dean – understand the power of digital technologies to not only engender diverse collectives but further predict that these new forms of social movements will inevitably produce as of yet unpredictable sociopolitical and cultural effects.

Cyberfeminism and the Third Wave

It is this excitement regarding how new media could transform society that appealed to many social movement workers. Feminists had been awaiting technology’s empowering effects since the early 1980s, producing an entirely new school of feminism termed cyberfeminism. Donna Haraway’s 1984 essay, “A Manifesto for Cyborgs,” unearthed potential for feminist revolutionary pivotal politics in the new field of technoscience. She insists that women must not refuse engagement with technology; rather, we must harness it and be embedded in it. By eschewing the essentialized, “wholeness” of the material self, we can thereby rid ourselves of the drama of our “naturalized” ontology. Women can be at once a little bit being and machine, natural/artificial, or, better yet, Sadie Plant’s “replicunt” or digital weaver, engendering the replicunt’s web of resistance. Cyberfeminism would be equally open to all (before issues of access were critically considered by cyberfeminists), so that we may “build and destroy these machines, categories, identities, relationships, spaces, stories” (Haraway 39).

Haraway’s text arrived amid not only the onset of the digital revolution but during third-wave feminism’s push to make visible the demands of excluded, marginalized women. These struggles in feminism challenged notions of a “universal woman” propagated during the work of predominately white first- and second-wave feminists. Third-wave feminism birthed Kimberlé Crenshaw’s notion of intersectionality which was further elaborated by Patricia Hill Collins. Collins considers the ways in which vectors of oppression stemming from sex, race, ethnicity, religion, and

sexuality create a matrix of domination which upholds white patriarchic hegemony. Black, Chicano, Arab, Native American, and queer feminisms gained prominence during this time, with Black feminism at its forefront, heralded by figures such as Audre Lorde and bell hooks. Constructing a counterrevolution to mid-twentieth century's social movements fighting sexism (second-wave feminism) and racism (MLK-styled racial equality movements), black feminists labored against the calls for egalitarianism such efforts maintained. The very term *feminism* itself went under fire, for the feminisms of the past rendered a women's experience as predominately that of the Western, white, middle-class, heterosexual female. Chandra Talpade Mohanty noted the inherent problematics of the term, for it represented "the falsely homogeneous representation of the movement by the media, [leading] to a very real suspicion of "feminism" as productive ground for struggle" (23).

Barbara Tomlinson has written extensively on the multiplicity of feminisms. Rather than finding despair in the conflictual demands of third-wave (and beyond) feminists, she finds such struggles for empowerment and recognition as generative of progress. Feminism must maintain flexibility when seeking out new social issues, goals, and audiences. Social conditions oscillate as does the populace, and feminism must be fluid – it cannot, then, be transhistorical or universal. When contestation occurs, Tomlinson encourages feminists to consider how agency may emerge. She surveys preexistent conflicts – how older feminists may claim superior knowledge regarding future demands which foreclose discussions of the present while green, amateur feminists may deride the lessons of the past. She writes, "Sure of the value of the feminism we have experienced, we sometimes cannot hear the voices of others, who are framing their own needs and desires for the future they live in too. The more dramatically worse social conditions become each day, the more they need to respond however we can, differently" (163). These "others" may be arriving at feminism from variant theoretical, historical, and political positions which will inevitably complicate abilities for "a knowable set of commitments, a historical origin, or an agenda of political acts and obligations" (164).

Perhaps it is no surprise that, for Jodi Dean, the multiplicity of feminism is directly related to its subsumption under global capital, for it relates to the façade of democratization and multiplicity of choice in the marketplace. Yet in a somewhat contradictory turn, Dean then notes that multiple feminisms are conceived around a lack; there are always spaces to be filled. Questions such as "how does race complicate this?" are frustrating and necessary. Attempts at blanketing such problems under banners of inclusive, totalizing intersectionality obscure the schisms feminism needs to be productive. Perhaps even more bizarrely, Dean applauds "power feminists" defined as "media-friendly, pro-capitalist, pro-sex feminism" (2001a, 24) and how they represent feminism's more radical core. The subversive interplay of embracing media capital as a space for empowerment demonstrates the ways in which communicative technologies work to create new spaces for female agency. Ultimately, feminism is about power, and to emphasize *equality* disrupts empowerment's potential.

Cyberfeminists underscored how new media technologies aid feminists in their empowerment efforts. However, cyberfeminism's digital dreams were ultimately

unrealized on a macro scale until ‘hashtag activist’ instances such as #YesAllWomen in 2015. But it was not until the Women’s March of 2017 that digital collectivity abounded at an unprecedentedly massive scale and exhibited a key distinguishing feature- an offline correlative. The March- both on and offline- produced a diverse collective of feminists with varying demographics, goals and approaches, proving Stiegler’s point that these technologies of the self produce networked individuals striving to individuate, Castell’s assertion that digital collectives are able to disrupt traditional resistance approaches and cyberfeminists hope for feminists utilizing tools of technology for empowerment efforts.

The Women’s March of 2017, the Fractured Mass

This is a women’s march and this women’s march represents the promise of feminism against the pernicious powers of state violence. And inclusive and intersectional feminism that calls upon all of us to join the resistance to racism, to Islamophobia, to anti-Semitism, to misogyny, to capitalist exploitation.

– Angela Davis, Women’s March of 2017

Toted as perhaps the largest march in US history, the Women’s March of 2017 on Washington on January 21, 2017, would be heralded as one of the greatest demonstrations of civil solidarity and resistance. With an estimated 500,000 people in D.C. marching (and five million worldwide), there was popular praise regarding the march’s peaceful demonstration for female empowerment. It all began the day after Trump was elected into office, when Teresa Shook living in Hawaii created a private Facebook group whose aim was to march on Washington. She invited a couple of friends from Facebook, and, by morning, the event had been posted on pantsuitnation.com with over 10,000 members “interested.” At the time of this draft, the official Facebook event page for the Women’s March of 2017 on Washington has over 700,000 members interested which does not include the unofficial event pages listed for the D.C. march. Though the Women’s March of 2017 would hardly be called a single-issue effort, it did bring together nearly 500 different NPO and grassroots organizations from a variety of different platforms and member bases.

The almost creationist quality of Shook’s march’s virality, spawning a sea of independent, localized march offshoots, speaks to the democratizing potential that seduced Castells to rhapsodize about digital technologies’ ability to harness swirling emotions and locate them within one central locale or collective. In its inception, the march was able to garner the affective energy of the crowd to mobilize public sentiment into an on-the-ground effort. Spreading with the ferocity of a country reeling from the recent presidential election, creating Facebook march event pages, and sharing with one’s friends allowed members to *feel* a sense of civic engagement. Because feelings of utility and purpose spur positive self-conceptions, these efforts were not difficult to engender among the greater group. According to a *LA Times* interview, Shook said, “That night I just did it because it made me feel better in the

moment, I hoped that people would get on board.” Simultaneously, New York fashion designer Bob Bland offered a “Million Pussy March.” Lead march organizers emerged and melded into one, dubbed the Million Women March.

Social media, in particular Facebook, undoubtedly enabled participants to organize in ways that felt personal by inviting friends to join while also stimulating feelings of collective impassioned support. Further, the dominance of Facebook allowed for the movement to flourish as a sort of catchall for liberal concerns which felt threatened under the impending new administration. Attendee numbers were undoubtedly bolstered by the general breadth of progressive issues espoused by the march, seemingly advantageous for the event’s visibility. The Women’s March of 2017 website’s Mission Statement claims no specified goal, policy, or agenda. They repeat Hillary Rodham Clinton’s (HRC) mantra that “women’s rights are human rights.” Such vagueness in mission undoubtedly garners large numbers of short-term supporters, such as people who may show up for a single march, but long-term, on-the-ground activist work oftentimes requires specification of vision. #BlackLivesMatter is an example of an online activist effort which also was able to capitalize on public outrage over a national crisis (such as the police muders of Trayvon Martin or Freddie Gray) but, in contrast, effectively focused this collective energy on pertinent, specific, and divisive issues such as reformation of police conduct with measurable legislative success.

Unfortunately, the Women’s March of 2017’s positive groundswell of support was to be replaced by great division. Many supporters found the name “The Million Women March” offensive and racially insensitive because it appropriated the name of a black feminist march in Philadelphia in 1997 with no explanation or rationale. The original Million Women March was formed as a response to popular [white] feminists who disregarded the struggles of POC – “The march provided a forum for issues that many blacks feel some women’s groups do not focus on. Among them were human rights abuses against blacks, the start of independent black schools and a demand for an investigation into allegations of CIA involvement in the crack trade in black neighborhoods” (CNN). Organizers quickly sought to remedy the situation by hastily underscoring intersectionality as a core value on their website while hiring women of color activists – Linda Sarsour, Tamika Mallory, and Carmen Perez – to lead the effort. Further, they changed the name to Women’s March of 2017 on Washington which still echoed the Martin Luther King Jr. led black worker’s rights march on Washington in 1964, popularly known as the event spawning his “I Have a Dream” speech.

What’s more, organizers issued a “Diversity Statement” on the group’s Facebook page. By critically tending to an affective analysis of this posting among other examples of online dynamics, I hope to gain greater insight into what I propose initiated the seeds of destruction for the movement-positioned march. I will be utilizing Deborah Gould’s text *Moving Politics* which introduced an affective analysis as a means to produce new insights into the HIV advocacy group, ACT UP. Gould’s text interprets affect as a motivational factor found in human response that is often unconscious, precognitive, and non-rational/linguistic. Gould finds this integral for stimulating political action (23). Pertaining to digital environs, affective

frameworks speak to the murkiness of embodiment's role in digital communication, for much like affect itself, the body sits behind the screen of "virtualities, potentialities, eventualities" (39). Social movements effectively rationalize affect, acknowledging certain feelings and actions while dismissing others. Gould uses the term emotional habitus to describe the emotional predispositions of a social group, allocating a sense of what and how to feel. Affective response shapes the way people feel in a collective; thus the emotional habitus can generate insight into the forces that stimulate sociopolitical movements. This enforces the recognition of emotions as not simply interior states, but molded by social interactions. Affect can uncover power dynamics in social relations, for often ideologies and politics emerge through its circulation (27). Ultimately, Gould finds promise for future activist efforts via affective studies, for "affect has the potential to escape social control, and that quality creates greater space for counter-hegemonic possibilities and for social transformation" (39).

The "Real" Trump Effect

In Gould's analysis, she devotes a chapter to understanding the sociopolitical context which shapes what Raymond Williams would term a structure of feeling that births a social movement. She writes, "Fear of the unknown, high expectations regarding change, satisfaction with the status quo, angry dissatisfaction with the status quo, or political depression – [which] can create certain politics" (41). For my own case study, I will focus on the night of the march's inception, the election of Donald Trump. Many political analysts, as well as the general public, felt assured that the veteran politician HRC would win the nomination. Running high off of 8 years of the rather liberal political agenda of the first black president Barack Obama, many had hopes for another precedent to be set with HRC's election. The 'Barack Obama effect' had idealistically proposed a post-racial era where racism would no longer define sociopolitical relations. Yet, the effect in actuality directly related to (after his initial year in office) a jump in gun sales by Midwestern men, speaking to a sense of fear and unrest regarding many POC's perceived newfound equality. White America, particularly white middle America, felt threatened. Such a sentiment amid high levels of unemployment in Midwestern and Southern states caused a backlash against popular assumptions of newfangled American progressivism.

When Trump was elected, many Americans felt shock regarding the poorly predicted election results. Women, in particular, felt great dismay over dashed hopes of a female president. Trump's cavalier sexism was seen in media leaked statements where he denigrated several women as "bitches," as well as bragged about grabbing a woman's "p***y" in addition to insulting HRC during a televised debate by calling her a "nasty woman." Such statements did not help to ease women's fears over renewed sexism in popular society as well as the White House. An article in *Politico* reported on a 3,000 member psychologist manifesto which charted the effects of Trump's candidacy on patients – "Trump's combative and chaotic campaign has stoked feelings of anxiety, fear, shame and helplessness,

especially in women, gay people, minority groups and nonwhite immigrants, who feel not just alienated but personally targeted by the candidate's message." Forty-three percent of the national public felt emotional distress from his political appearance.

Aiding in Trump's visibility were Alt Right news organizations, heralded by *Breitbart News* starring shock pundits such as Milo Yiannopolous who mocked Holocaust survivors and scorned feminist organizations. Additionally, "fake news" ironically made national headlines which consisted of false news stories which circulated rapidly via social networking sites such as Facebook; such mediated instances sowed further seeds of distrust among the populace. Fear of heightened discrimination was abounding throughout the nation due to Trump's promised political policies. Trump ran on platforms which purported building a wall to keep "Mexicans" out (which he had previously associated with rape and criminality), imposing a "ban" on Muslims, revoking Obamacare, among dozens of other implicitly (and explicitly) racist, sexist, xenophobic, and big business-oriented policy plans. The 'Trump Effect' purportedly reflected increases in numbers of school bullying, specifically directed against minorities. There were reports of black churches set aflame while hate crimes increased against queer and Muslim targets.

What further shocked many Americans beyond Trump's election was the repeatedly publicized statistic that more than 50% of white women voted for Trump. Women around the country felt betrayed by their gender for not supporting the would-be first female president. Perfidy was further felt among a schismed Democratic party where a vibrant youth vote felt energized by the socialist-democratic ideals of Bernie Sanders; Sanders' supporters stood staunchly against the politically elite Clintons and refused to support HRC. Therapists were advising nail biting women postelection to join the Women's March of 2017 for a sense of enhanced solidarity and support.

Oh, Audrey...

All of this swirling sociopolitical milieu worked to color the tone of the digital dialogues abounding on the Women's March of 2017 Facebook page. As stated, I will specifically be considering the Diversity Statement and its commentary (see [Appendix](#)). The statement was posted on November 20, 2017, by founder Bob Bland. It was intended to be contrite, correcting the appropriation of the black feminist Million Women March, suggesting transparency, concern, and responsiveness. The statement was presented as an origin story of sorts, acknowledging in an almost apologist tone that all founders of the movement were white women. The motif of intersectionality (sans definition) as a necessary component to inclusivity was repeatedly stressed via four repetitions of the term "together" as well repetition of terms "inclusive," "united," and "ALL" which the statement ended on as all caps. Further emphasis was placed on the call to carry the march's energy into a movement which would go far beyond the march's date. The Diversity Statement had 892 shares

and 4.6 thousand likes which up until that date represented one of the most visible posts. This of course changed as the march loomed closer; enthusiasm page's and participation spread resulting in more and more likes, ranging from the thousands to, at its zenith, 30,000 likes for posts encouraging attendance days before the event. It is worthwhile to note that likes and shares tapered off post-march, with most posts in the last 2 months averaging several hundred likes and peaking at a couple thousand.

But to return to the Diversity Statement, to the Diversity Statement, the initial comments were ones of support though they pointed out the [ironic] misspelling of Audre Lorde's name as Audrey (an anglicized spelling of the name) who the writers had quoted in the introduction – "It is not our differences that divide us. It is our inability to recognize, accept, and celebrate those differences." This mistake was quickly corrected through four comments pointing out Bland's mistake. Such negligence stands as indicative of the racialized discord and noncommunication which haunted the Women's March of 2017. Overall, nearly 400 comments mentioned such terms as solidarity, support, oneness, inclusivity, "all" . . . but what on the posting proved particularly intriguing was that when I looked back over the entirety of the comment threads, many occupied polar opposite standpoints. Nearly half supported the name change as an effort to be more inclusive, while many others, predominately white women [this information was derived via profile pictures], felt the name change indicated "infighting" and ultimately led to feelings of rupture.

Over 220 comments dissented entirely – either over the lack of the name change effectively righting the wrongs of racial appropriation or defending the name change against detractors (generally arguing under unity rhetoric). Many who fit into the latter category argued that white women who were offended over the name change didn't understand what "white privilege" was (with repeated links to a *Huffington Post* article titled, "What is White Privilege?"). A sampling of these categories of commentary may be seen below:

I was appalled when I first saw the name of this march, and am glad some efforts have been made to change that, but this thread makes me sad and I do not know how I can participate if I know the voices of so many are unwelcome because they have experiences white women find threatening.

We are trying to stand united against a system that is looking dangerously like it wants to set women's rights back. We simply do not have time for infighting! Those who stand against us use the infighting to divide and conquer.

I will have to check it out because growing up dirt poor from the wrong side of the tracks I've never felt privilege and I have been fighting for equally for all women since I was in jr high I'm now 61 and here I go again guess I'll be fighting for it until the day I die

Kimberly Peterson I am at an awe as to why this Facebook post needs to be a discussion of anything but organizing a march and its details. That is what the post is called! Women's March of 2017...why it became a discussion of other issues is beyond me. Keep up the hard work.

The top response denoting feelings of "shame" was repeatedly expressed, nearly 10 times through the chain though not nearly as often as angered white privilege

responses were exhibited. Gould suggests that shame is productive grounds for partnership building, for shame does not necessitate shaming but rather when done in a way that is nonmoralizing and educative, it can illustrate the ways in which a white person may feel “shame about her ignorance, about her complicity in structures of racism. . .here. . .the feeling of shaming itself might elicit a positive political effect” (383).

Of particular note was that “white privilege” was only briefly mentioned in the statement – “It is important to all of us that the white women who are engaged in this effort understand their privilege, and acknowledge the struggle that women of color face.” Yet, the gross majority of dissension and debate throughout the nearly 900 comments addressed the issue of white privilege. Many of the white privilege deniers were middle-aged to older white women (once again, ascertained from Facebook profile pictures) who argued against a literal reading of the term “white privilege” which undoubtedly could have been better addressed by the organizers. Citing difficulties of poverty, sexism, and various health, physical disabilities, many of these women refused to acknowledge that their whiteness granted them social preference. Many also expressed anger over perceived moralizing responses suggesting elements of racism in denial of such privilege (including several “F* you” directives). Gould noted similar racialized tension in her work with ACT UP members, stating, “Whatever one’s tone and intention, challenging whites to consider how they are actively working to erode their own privileged position in society might provoke or amplify already existing ‘white liberal guilt’ – that is, whites’ guilt about racism (and fears of appearing racist), along with resentment at being made to feel guilty about historical and contemporary events in which they may have had no part” (383).

Several “diversity dissenters” arguing against white privilege attempted to defend themselves against what they perceived as indictments of racism by stating that they had worked in feminist efforts before, and such discussions on race only worked to factionalize the greater group, such as the following example illustrates (notice too the emphasis on capital investment):

Hey stop the white privilege crap. This is simply about protesting the trumpster and all of his views. I am 64 and veteran protester. Y'all are over thinking this. It's for everyone who wants to go and protest his ridiculous and very dangerous views. I have invested a ton of Money on this and hope y'all calm down and focus on getting a permit along with the logistics. It should be for everyone. Just say that and quit the stupid squabbling. we are all protesting the same thing, right?

Many stated they had “black husbands” or worked in “black school districts,” in an attempt at unifying racial discord, demonstrating what Gould noted as notions of “universalism and progress” which seek egalitarianism despite overt theoretical or political impediments (380). Undoubtedly, older white females are familiar with historical memories of more overt racism such as that displayed during the segregation era of the 1950s and 60s. They are aware that the racism today may look differently than it did in their past; many of these older non-POC feminists experienced the ‘democratizing’ comforts of second-wave feminist notions of equality. The schisms that third wave feminism introduced via intersectional concerns seemingly

produced an alienating effect for feminists of previous generations. Racially imbued dissension in this context produced many reactionary responses. Perceived identity difference can thus create feelings of “resentment, anger, guilt, hatred, fear of betrayal, and fear of loss of power and recognition” (386) which were all displayed throughout “white privilege deniers” responses. When attempts at recognition and understanding aren’t achieved effectively for the majority, a perceived moralism may erupt through this sense of loss, loss of the potential for egalitarian inclusivity.

It is integral to note that creative social interactions such as those erupting during digital collective organization are certainly capable of producing political and/or social change, but for such demands to be met, one must recognize the endurance of social and political structures that persevere around movement members. Christina Dunbar-Hester’s work with media activists notes the ways in which communicative technologies are material, bodily and discursive sites “where social identities and social or/or resisted” (130). The ease of digital communication and the instantaneity of response, particularly an impassioned one, works to further fracture groups. Zizek’s notion of interpassivity complicates these volatile digital interactions; the term describes the self-bloated subject endlessly overproducing content which satisfies one’s sense to be heard but, in reality, is lost in the mess of messaging. The subject is plagued by fear of inability to know the Other at the end of your cyber dialogue; one must attempt to root oneself in some archetypal notion of self where one’s discrete identity can overcome such threat (502). A similar defense mechanism is demonstrated in these Women’s March of 2017 dialogues.

Though those that combatted the “white privilege deniers” included both white and POC respondents, it is worthwhile to note that the emotional habitus occupied by marginalized groups inevitably is shaped by their individualized experiences of oppression. This works for white women claiming economic impoverishment as well as POC commenters speaking from their personal encounters with racism that is both recognized and unrealized.

Further discord circled around demand for marginalized groups who were not named – most notably disabled women although Asian American and Pacific Islanders were also repeatedly noted. There were calls for conservative women and Trump voters to not attend as well as squabbling over if the march was a protest, rally, or had a specific aim.

Many comments called for POC women to abstain from the march entirely, including links to Brittany Oliver’s blog provided a sampling of POC dissension responses. Oliver was a former Women’s March of 2017 organizer in Pennsylvania who publicly blogged about her “silencing” over not only the initial name change but the second name change as well. Oliver asserts that she was not alone, that there were multiple other state administrators upset over the renaming. As mentioned earlier, they argued that the new name again appropriated a POC march in the name of an organization and event that was not explicitly touting POC women’s concerns. One such digital repercussion of the Women’s March of 2017 naming appropriation resulted in the Women’s March of 2017 occupying the initial hits when one googles the search terms “The March on Washington.” This once again erases POC culture from mainstream knowledge banks. Oliver writes that her

and fellow name dissenters were consequently kicked out of private Facebook groups, and their comments were blocked on their own event pages. I can attest that throughout my own research of not only the Diversity Statement, but consideration of every post made throughout the history of the march, many further comments mentioned that they were “waiting for their comment to be approved” or pleaded for administrators to block “trolls” whose comments weren’t presently shown on threads. Certainly, the administrators and Facebook moderators (working off of “flagged” community posts) kept tight control over displayed community content, perhaps also complicating the ability for fruitful argumentation that would enable a more cohesive, productive dialogue.

Of worthwhile note, Brittany Oliver’s blog (among others) noted that what ultimately quieted dissenting state administrators’ voices was the acknowledgment that their role forced them to take full liability for any illegal actions due to the lack of a national umbrella organization which could absorb liability. These state leaders submitted no legal paperwork, nor were they educated on what the legal ramifications were for starting an unincorporated association. Many had started fundraising pages which opened them up to fiscal liabilities such as repayment due to fraud, tax evasion, or direct responsibility for any civil suit filed against their state organization.

The Diversity Statement thread showed further fragmentation via anxieties due to earlier media coverage reporting the lack of the organization’s march permit. Over 100 comments were concerned about the permit not having been received by movement’s founders. Some comments even decried trusting “bougie New York the social advocates” asking if “anyone knew what they were doing?” Issues of class were not addressed except when a few stray comments maintained that they couldn’t afford to go to the march. These comments that asked about free rides or cheaper places to stay were met with support, though the most concrete suggestion anyone supplied were to create a GoFundMe page. Lastly, dozens of comments splintered regarding the actual focus of the march – was it anti-Trump? Was it for universal human rights? Women’s rights? Women’s reproductive health? The Women’s March of 2017 Twitterfeed featured vocal contestation from men who wished to be involved but felt the movement alienated them by not directly appealing for their inclusion.

The seeds of splintering had already been sewn. On December 28, 2016, ShiShi Rose, an admin for the organization’s Instagram account, posted a piece on Facebook further describing white privilege under the heading, “White Allies Read.” The post received 7.5 million “reactions” (majoritively likes), 590 comments, and 2.7 thousand shares which made it one of the most visible posts of that month. The entire thread was filled with repeated discussion points seen in the Diversity Statement thread except there were more shares. Rather, repeated exclamations of “disappointment” with ensuing embattled cries of racist ignorance produced increased demonstrations of anger and discord. Such moralizing rhetoric suggests a certain breakdown of social order. As Gould states, “A dynamic of responding to moralism with further moralism makes dialogue across differences extremely unlikely” (380). It effectively stymies productive conversations, and activists become discrete identities disabled in unity.

Organizational mistakes abounded. Over-responsiveness by organizers caused a certain air of wishy-washiness to maintain high member numbers. The Women's March of 2017 then edited out a statement published on their website in support for sex workers' rights and then edited it back in. The march's organizers had hoped it would begin at the Lincoln Memorial, but due to a late permit application were beat out of that location by attendees of Trump's inauguration. The iconography utilized by the march was overt in its attempt at multicultural, multiracial inclusivity. Literally every image featured multiracial women, and in one example, their multiracial hands are clutching together to support a tiny white bird Shepard Fairy was even called on to contribute to the intersectional imagery. January 5th's *Washington Post Express* printed a cover story of the march which may have been positive publicity except they published the gender symbol for male instead of female.

January 21, 2017, and Beyond

The day of the march, I can attest, felt important, restorative, and awe-inspiring. The streets of DC were packed beyond attendance estimates, with easily over 500,000 participants. There were, as expected, certain strategic difficulties. The streets were so overburdened with people that the march was delayed and movement was stalled for hours. The metro system was overwhelmed as were the cell phone towers (despite millions of dollars spent in preparation by digital tech companies such as Verizon). The speakers were totally inaudible, featuring a slew of celebrity A-listers like Ashley Judd, ScarJo, and Madonna who eloquently told Trump to "suck a dick." There were pro-life feminists who showed up with a huge banner which read, "Abortion is a tool of the patriarchy" which offended many women who supported one of the march's main sponsors, Planned Parenthood. The sea of pussy hats felt inconsiderate of transwomen's inclusion in the movement. Oh, and perhaps the most widely shared photograph of the march?

Angela Peoples, an activist and political strategist, created a sign for the march that would be shared a million times over; it simply said, "Don't Forget: White Women Voted for Trump." The image itself showed Peoples holding the sign, sucking on a lollipop and staring off into the distance while three white women in pink pussy hats took selfies with the White House looming behind them. This image spoke to the unresolved racially-imbued dissonance that continued to divide not only Women's March attendees, but women in the voting booth.

So what does the Women's March of 2017 look like today? Well, the "movement" is maintained through their "100 Days/100 Actions" program which provides explicit directions for civic involvement. A particularly large push was exerted for a Women's Day Without Work strike and march. The Facebook event page promised over 700 attendees for the DC march; I attended. There were roughly 300 rather un-enthused and dispersed participants. Following the 100 days, there has been no specific follow-up programming or praxis. Instead, Women's March of 2017 members can purchase, for \$30–40, their own Pen Award because "the spring of resistance has become a nationwide groundswell because of the work you've dedicated

yourselves to, building community and fighting back.” Proceeds will go to the monetary maintenance of the Women’s March of 2017, cushioning the already accumulated \$2 million in donations.

As of today, it is difficult to point to any direct concrete social or legislative effect of the march or its continuing efforts. This does not mean that the march was a failure; it may be a failure in its status as a social movement, but as a singular event which provided a sense of support and solidarity for many women, it was successful. Perhaps today’s political context of Republicans controlling the House, the Senate, and the presidency is ultimately what disabled the Women’s March’s progressive policies from taking hold. Perhaps Jodi Dean’s assertion that entrance into and reliance upon communicative capitalism inevitably smothers effective civic resistance. The Women’s March of 2017 undeniably embraced an activism model which utilized strategies of the market place, of advertising. The reliance thus on quantitative data, the number of marchers, of Facebook likes, and of dollars collected, subjects the entire Women’s March of 2017 operation to monitoring and surveillance, a further critical investigation ripe for additional analysis. Movements inevitably ask less of their participants to maintain their numbers (clicktivism/slacktivism) which effectively stifles real on-the-ground activist work necessary for concretized sociopolitical change. Further, the Women’s March of 2017 may have suffered from the lack of focus regarding a specific, achievable goal. It is challenging to stimulate conversation and participation post-march when everyone arrived for different reasons and only the category of “woman” to unite them. For, as Donna Haraway once stated, “There is nothing about being female that inherently binds women” (197).

As Manuel Castells and others have noted, undoubtedly, the Women’s March of 2017 was able to originate due to its online presence, but it also was perhaps stifled from formulating a cohesive social movement via its reliance on the tools of digital communication. As Kittler and Stiegler remind us, our technologies create, mediate, and codify our culture, and the Women’s March’s online discord demonstrates this point. By applying an affective lens to the digital dialogic currents inspired by racially induced schisms within this (and the broader, historicized) feminist effort, we can see how previous points of oppression are re-enlivened online. The movement’s dependence on digital tools of communication positions it as open to the capitalistic attacks of member’s self-assertion; this inevitably fractures group cohesion, leaving only the lonely neoliberalized collection of individuated identities. This is particularly a sorespot for feminist efforts; but there is hope yet. Jodi Dean and Barbara Tomlinson are encouraged by multiple feminisms, for within feminism’s contestations such spaces may be better directed, “not to discipline feminists and feminism but to stimulate the growth of networks of connection and exchange” (Dean, 35). It’s hard to know what such instantiations may appear as. Perhaps, as Franco Berardi and others have asserted, an effort of radical passivity, or an active withdrawal from such contexts and toolery, is needed for true subversion to develop. Regardless, attention to affective currents proves illuminating for digital activist efforts, for, to end on the hopeful wisdom of Gould, “attending to affect can illuminate how hegemony is effected but also why it is never all-encompassing” (27).

Appendix

Women's March of 2017 Facebook Diversity Statement Post, Women's March of 2017 On Washington: Origins and Inclusion

"It is not our differences that divide us. It is our inability to recognize, accept, and celebrate those differences."

— Audre Lorde

We have heard concerns voiced that some do not feel adequately represented in the Women's March of 2017 on Washington (WMW). We want to state to you clearly: we see you, we hear you, and we understand. As witnessed by the recent election, there has been a profound deepening of the divisions in our country. Etched in history, these divisions cleave us from one another across the lines of racial, ethnic, religious, and sexual identity. We seek to address these divisions and stand together in the face of injustice. Together we will raise our voices in the service of all people.

The WMW began organically on November 9, the day after the election, after Teresa Shook a.k.a. Maui, a grandmother residing in Hawaii, proposed a call to action to 40 of her friends to march in Washington, D.C. Her friends invited their friends, and by the time the idea hit the Facebook group Pantsuit Nation, there were a number of women administering pages generating thousands of sign-ups by the hour.

Bob Bland was one of those women. Working with Evvie Harmon, Fontaine Pearson, and Breanne Butler, among others, they consolidated the pages into one united effort. The reality is that the women who initially started organizing were almost all white. As the movement grew, they sought ways to address this crucial issue. One of those who signed on early, Vanessa Wruble, took the initiative not just to include women of other backgrounds but to make sure that their voices were centered in the convening and the decision-making process. It was, and is, clear that the Women's March of 2017 on Washington cannot be a success unless it represents women of all backgrounds.

The first step was to engage Tamika D. Mallory, Carmen Perez, and Linda Sarsour as National Co-Chairs to work alongside Bob and her team. In 2015, they led a march from New York City to Washington, D.C., traveling an impressive 250 miles on foot to demand changes in America's criminal justice system. These women are not tokens; they are dynamic and powerful leaders who have been organizing intersectional mobilizations for their entire careers. Together with the original team, they brought on an incredible group of women to set the agenda and handle the coordination of the WMW, including Janaye Ingram, Tabitha St. Bernard, Karen Waltuch, and Cassady Fendlay. The first week was a heavy lift to ensure a solid structure, but the organizers continue to work hard to engage people from diverse communities. Now voices including Asian and Pacific Islanders, Trans Women, Native Americans, disabled women, men, children, and many others can be centered in the evolving expression of this grassroots movement.

It is important to all of us that the white women who are engaged in this effort understand their privilege and acknowledge the struggle that women of color face.

We have and will continue to encourage our state organizers to reach out to women from all communities. This means not only asking them to join the WMW but also challenging our new community to show up in support of the efforts of other activists and fighters for justice.

The work of this march is not only to stand together in sisterhood and solidarity for the protection of our rights, our safety, our families, and our environment – but it is also to build relationships and mend the divides between our communities. It's hard work, and it will be ongoing. It's an ambitious goal – one that reaches far beyond January 21st – but we believe that there is no other way forward. Only together can we march toward freedom.

The Women's March of 2017 on Washington is just the first step; what comes after is up to us ALL.

References

- G. America's therapists are worried about Trump's effect on your mental health. 746 Politico, 10 Oct. 2016. Web. 12 Mar. 2017. <http://www.politico.com/magazine/story/2016/10/donald-trump-2016-therapists-214333>
- Castells M (1996) The rise of the network society (The information age: economy, society and culture), vol 1. Blackwell, Malden. Print
- Castells M (2012) Networks of outrage and hope: social movements in the internet age. Polity Press, Malden
- Conroy M et al (2012) Facebook and political engagement: a study of online political group membership and offline political engagement. Comput Hum Behav 28:1535–1546. Elsevier
- Couldry N (2003) Media rituals: a critical approach. Routledge, London
- Dean J (1996) Solidarity of strangers: feminism after identity politics. University of California Press, Berkeley
- Dean J (2001a) Communicative capitalism: circulation and the foreclosure of politics. Cult Polit Int J 1(1):51–74. (2005)
- Dean J (2001b) Feminism in Technoculture. Rev Educ Pedagogy Cult Stud 23(1):23–47
- Diversity Statement. Women's March. November 20, 2017. <https://www.facebook.com/events/2169332969958991/permalink/2178409449051343/>
- Hardt M, Negri A (2005) Multitude: war and democracy in the age of empire. Penguin, New York
- Hester CD (2010) Beyond "Dudecore"? Challenging gendered and "Raced" technologies through media activism. J Broadcast Electron Media 54(1):121–135. Web. 2 Mar. 2017
- Huber C. The problem with the Women's March on Washington and White Feminism. Nerdy But Flirty. N.p., 01 Dec 2016. Web. 16 May 2017
- Mohanty CT (1991) Cartographies of struggle: third World Women and the politics of feminism. In: Mohanty CT, Russo A, Torres L (eds) Third World Women and the politics of feminism. Indiana University Press, Bloomington/Indianapolis, p 7
- Stiegler B (2009) Teleologies of the snail: the errant self wired to a WiMax Network. Theory Cult Soc 26(2–3):33–45
- Tomlinson B (2010) Feminism and affect at the scene of argument: beyond the trope of the angry feminist. Temple University Press, Print, Philadelphia
- Tornquist C. Million woman march fills Philadelphia streets. cnn.com. CNN, 25 Oct. 1997. Web. 10 Mar. 2017. <http://www.cnn.com/US/9710/25/million.woman.march2/>
- Werner M. Who started the march? One woman. LA Times. N.p., 21 Jan. 2017. Web. 10 Mar. 2017. <http://www.latimes.com/nation/la-na-pol-womens-march-live-who-started-the-march-one-1485033621-htmlstory.html>



The Future of Crowdsourcing Through Games

51

Karen Schrier

Contents

Introduction	936
What Is Crowdsourcing?	938
What Is Collective Intelligence?	940
Why Games?	942
Games Are Played Frequently	942
Games Can Be Effective as Collective Problem-Solving Spaces	942
Games Can Optimize the Strengths of People Alongside the Strengths of Technology	942
Games Are Motivating	943
What Is the Best Name for These Types of Games?	944
Categories of Games Explained and Examples of Games	945
Knowledge Games Typology	949
ARTigo	951
Nanocrafter	952
Conclusion	952
Next Steps	953
References	953

Abstract

This chapter reviews the intersection of crowdsourcing, collective intelligence, and gaming and labels these a new type of gaming experience called knowledge games. The aim of knowledge games is to invite multiple game players to participate in real-world problem solving and novel knowledge production. For instance, the classic example is that of *Foldit*, a game that invites players to manipulate digital representations of proteins to better understand how real-world proteins fold. This chapter describes key terms related to knowledge games, gives an overview of the initial strengths and weaknesses, discusses naming these

K. Schrier (✉)

Marist College, Dutchess County, Poughkeepsie, NY, USA

e-mail: kschrier@gmail.com; Karen.Schrier@marist.edu

games, and provides a nascent taxonomy for categorizing these types of games. This chapter also provides an in-depth description of two examples of knowledge games, *ARTigo* and *Nanocrafter*, to better understand what knowledge games are, to explore, open gaps, and to determine future needs in designing, using, and critiquing these games.

Keywords

Crowdsourcing · Games · Collective intelligence · Taxonomy · Citizen science

Introduction

Can real-world problems be solved through games? Can novel questions be asked, open mysteries be solved, and innovative knowledge be produced by inviting players to participate in games? These are big, important questions in a future with increasingly complex problems that require interdisciplinary and sociotechnical approaches.

However, even asking such questions may be surprising, as the mainstream discourse around digital games is that they are wasteful or even harmful, something that should be controlled and limited, and, at a minimum, nonproductive and useless. Why bother, then, to investigate a medium that seems to be causing problems rather than solving them?

Yet, on the other hand, recent research, such as in the field of games and learning, has started to substantiate games as a medium worthy of emotional expression, learning, cultivating compassion, critical decision-making, and/or attitudinal change. In fact, games, just like any platform or medium, can be designed for different purposes and needs and have particular strengths and weaknesses that might make it better or worse for particular goals. For instance, gaming has been applied to a number of prosocial and educational purposes, such as in training, healthcare, and education (e.g., Squire 2011; Shaffer 2006; Wouters et al. 2013; Plass et al. 2015; Schrier 2014). For example, the iCivics games and related curriculum have been used in a large proportion of schools to teach citizenship and social studies skills, and the *Mission US* series of games have been used in social studies classes to teach historical empathy and critical thinking skills.

Moreover, researchers have started to point out that throughout history, gaming has always been used to teach and learn – about ourselves, about each other, and about the world. For instance, kids might play simple games with each other, where they can safely explore boundaries and rule systems, learn how to work with others on a team, experience winning and losing, take turns and count, and/or take on and practice roles such as banker or firefighter. Games, through their design and their play, can give insight into the human condition, as well as human values, systems, and truths.

This chapter poses newer questions about games and learning. Previous and current questions have been the following: Can games help people learn? Under which conditions can games teach? What types of contexts, content, audiences,

topics, skills, and goals benefit most from what types of games, gameplay, game interactions, and game ecologies? These are still important questions, but they are not the aim of this particular chapter. Moreover, recent questions have also been as follows: Can games or game-like content and interactions be applied to other contexts, such as work, health, or personal growth? This type of process is popularly called gamification (Ferrara 2013). While it may be useful to explore how crowdsourcing or other processes might work in nongame environments, these types of questions are also not the central goal of this chapter.

Rather, this chapter considers whether games themselves can be used to make change and help to better understand the world – whether through knowing how to fold proteins in *Foldit* or engaging with antibullying techniques in *SchoolLife*. This chapter considers not just *what* can games teach, such as by acting as contexts or conduits for learning topics or skills but rather what can games teach *to society*, such that the game itself, and what is produced, shared, and solved through it, becomes what human society still needs to learn. In other words, because games are (possibly) dynamic systems with diverse players who can come together in meaningful ways, can the game help people work together to solve problems or learn new concepts about the humanity, the world, and the universe?

To begin to answer these questions, this chapter will first share the latest research and practices related to the overlap of three emerging trends – crowdsourcing, collective intelligence, and games. This chapter will explore their interconnections, as well as the strengths and limitations of this new field of inquiry.

For example, there are now science-focused games such as *Fold It* (Khatib et al. 2011), which enable thousands of people to fold 3-D representations of proteins and submit their designs, and *Play to Cure: Genes in Space*, in which game players plot routes through space, providing information about anomalies in cancer data (Keartland 2014). *Quantum Moves* helps expand knowledge into quantum computing and related problems (Lieberoth et al. 2014). Games are also in the process of being designed to help solve social issues and problems, such as the *Sudan Game*, which helps participants test possible steps toward peace in the Sudan (Landwehr et al. 2012), and Giant Otter's in-progress antibullying game, which helps people learn how to interact in bullying scenarios and teach these learnings to computers. Games such as these enlist "amateur researchers" to collaborate online to submit and/or analyze data; solve complex problems and puzzles; identify, observe, and record the world; make estimations; or share perspectives. These games are theoretically effective, in part, because they blend human beings and computers together in ways that optimize their unique talents and/or because they bring people together across distance and time and effectively use their skills, abilities, and resources. For instance, human beings are effective at tasks such as pattern recognition and spatial manipulation, whereas computers are proficient at processing these tasks faster. Putting these two together, through a game, can potentially lead to new ways to approaching problems. Or a group of people with diverse talents might be even more effective at problem solving together. Likewise, a research team might be more able to complete large amounts of tasks if they are delegated to a wider number of people. In other words, everyday people are able to play games and work in tandem with

computers, other people, and/or researchers to contribute to the body of knowledge about the world.

For brevity, this chapter labels the problem-solving games as knowledge games going forward. Knowledge games is the term used because it suggests that these games seek to enhance the knowledge of a specific topic, process, or phenomena and make real-world change within the game itself, but that affects the world outside the game. As Schrier explains, knowledge games refer to “those games that invite human beings or other entities to play and work collectively (either with others or individually) to contribute information or data and/or perform tasks or activities that can help answer specific questions, create new knowledge, and contribute to an understanding of the world. An although Knowledge game players are playing and problem solving within a game environment, the knowledge created has implications for real world processes, policies, problems, and people” (Schrier 2016).

In the next section, the chapter will describe the terms and frameworks that are relevant to these knowledge games, as well as explore what to call these games.

What Is Crowdsourcing?

Crowdsourcing generally refers to the culling and contributing of information, perspectives, opinions, and analyses for a particular goal or objective. This process or activity is relevant to knowledge games because many of these games rely on players to collectively submit data, analyze data, or share perspectives, interpretations, or impressions. Part of why these games are effective, perhaps, is because they help to collect information from many players. Having multiple people share information or interpretations helps the designers better solve part of a problem or answer an open question.

There are many nongame examples of crowdsourcing. One company, Threadless, crowdsources opinions on t-shirt designs and then makes those shirts available for creation and purchase. Frito-Lay runs a “Do Me a Flavor” contest, where they crowdsource possible new flavor combinations and then have the audience vote on the best flavor (and then they make the flavor that wins). The Google-owned Waze enables drivers to submit traffic information so that other drivers can know which roads to avoid or take (Schrier 2016).

The phenomena of inviting public contribution on a large scale is not entirely new, even though there are now sociotechnical platforms that enhance and increase the ability to support these types of activities. Crowdsourcing-like activities have happened throughout history, but the use of online platforms, such as apps, social networking sites, and websites, has expanded and enhanced these activities. For instance, in Mattioli’s series of books (commentaries on plant systems), he sought the help of the public to provide submissions and corrections to plant specimens and identifications way back in the 1500s (Eisenstein 1979). In more recent time, Gooseberry Patch is a publishing company that has invited the public to submit recipes for inclusion in their cookbooks since 1992. The co-founders of the company

originally incorporated recipes that were mailed to them and now also select recipes from those emailed to them and submitted online or through social media.

Crowdsourcing-like activities have been used for a variety of functions and purposes, such as urban planning, advertising, historical document annotation and transcription, finding lost people, filmmaking, photography, scientific inquiry, and television. For example, TV by the People was a project launched in 2013 to garner opinions from the crowd to help in creating a new television series. First people were able to submit television show ideas, and then participants were able to deliberate the project, leading to a new series called “Turning Point.” Likewise, budding entrepreneurs can submit business ideas via the SomePitching competition, which enables people to pitch ideas, vote on ideas, and share advice from investors and specialists. Citizen science activities could be considered a type of crowdsourcing but for scientific data and analyses. Amateur astronomers have been contributing variable star data for over a hundred years to the AAVSO; likewise, amateur birders have been contributing bird-feeding data to the Christmas Bird Count for the Audubon Society for many decades. Both of these activities are now supported through websites but were previously shared through written books and other non-digital records.

The term “crowdsourcing” originated in Jeff Howe’s *Wired* article, “The Rise of Crowdsourcing,” (Howe 2006) which he then expanded upon in the book, *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*, where he explained that it is “the process by which the power of the many can be leveraged to accomplish feats that were once the province of a specialized few” (Howe 2008). Since then, people and companies have used the term in a variety of ways that do not always coincide. For instance, researchers Zhao and Zhu analyzed 55 research articles from 2006 to 2011 and found no consensus in how these articles used or defined the term “crowdsourcing” (Zhao and Zhu 2012).

Daren Brabham, for example, defines crowdsourcing as an “online, distributed problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals” (Brabham 2013). In other words, Brabham describes crowdsourcing as a process or phenomenon where people are solicited (typically by an organization, research center, or company) to provide data, analyses, or perspectives to meet a particular goal or need. Additionally, Brabham argues that crowdsourcing should have a mutual and equitable benefit for both the audience (crowd of people) and the organizers (company, researchers, institution, etc.) (Brabham 2013). Based on this definition, Brabham contends that Threadless is an appropriate example of crowdsourcing because there is mutual benefit on the parts of the users and organizers: the organizers get to learn which t-shirt designs might sell best, and the crowd gets to purchase and wear the t-shirt designs they like the best. The crowd also gets the opportunity to sell their own designs through the online Threadless system, if their designs are upvoted by the crowd.

On the other hand, people have often labeled websites, communities, and other activities as engaging in crowdsourcing behaviors that Brabham would not define as crowdsourcing. For example, Zhao and Zhu consider Wikipedia a crowdsourcing

site. However, Brabham argues that Wikipedia is an example of something that is not crowdsourcing because there is no equitable balance between the organizers and users, as the benefit and activity are heavier on the users rather than on the organizers. The users benefit too much for it to be a true crowdsourcing relationship, according to Brabham.

The trickiness and ambiguity of defining and pinpointing when crowdsourcing is being engaged are points to consider when discussing knowledge games. Are the game players getting enough benefit from the contributions (such as the game itself), or are the designers/researchers who make the games benefitting so much more such that the game is not crowdsourcing anymore but something more akin to an employer/employee relationship or researcher/participant relationship? Using design methodologies and best practices from other crowdsourcing projects will be useful for those creating and using new knowledge games. However, designers should also be aware of how they are shaping the power dynamics; identifying and exploring these dynamics are key areas of focus for the future.

What Is Collective Intelligence?

One question is whether having a crowd of people submit answers or data is really the most effective, efficient, and useful way to solve problems through games. Why not, for instance, use a team of experts to solve the problem? Why use amateur game players when professionals might be more experienced in a particular problem or field?

To understand more about why a crowd of game players might be particularly useful in helping to meet goals and particular functions, this chapter will consider other concepts including crowd wisdom and collective intelligence.

Crowd wisdom, or the “wisdom of the crowds,” refers to a term popularized by Surowiecki in his book, *The Wisdom of the Crowds* (Surowiecki 2005). In his book, Surowiecki contends that a crowd of opinions and estimations is typically more accurate on average than any one person in that crowd or even an expert in the field. For example, if people try to guess the amount of marbles in a jar, the average guess is more accurate than most of the individual guesses (Surowiecki 2005). He extrapolates, then, that thoughtful decisions should invite many voices, rather than just relying on one expert or professional.

Likewise, collective intelligence is another term that describes the phenomenon that there is knowledge in the collective rather than inside just one person. While crowd wisdom explores how people, on the whole, can make better estimations, collective intelligence explores how people who are working together can solve problems more effectively and make better decisions and solutions (Lévy 1997). The term collective intelligence was originally used by Pierre Lévy. His use of the term suggests that knowledge and know-how are distributed among people and, by bringing people together, can use these talents and tidbits to better solve problems and cooperate to reach goals (Lévy 1997). Collective intelligence examples include things like disparate *Survivor* fans using online forums to discuss and figure out

Survivor spoilers (Jenkins 2006) or people working together to find missing people following the earthquakes in Tibet. However, similar to crowdsourcing, there are many different definitions and uses of collective intelligence, with Tapscott and Williams defining it as akin to mass collaboration in the business sector (2006) and Malone and Bernstein taking a more multidisciplinary approach and broader application, and considers collective intelligence as involving any “groups of individuals acting collectively in ways that seem intelligent” (Malone and Bernstein 2015), meaning that families, armies, countries, and research labs are groups of people working together in intelligent ways (Malone and Bernstein 2015; MIT n.d.).

To some extent, collective intelligence activities overlap with those involving crowdsourcing, although the two terms have different meanings. Crowdsourcing suggests using a crowd or group to work on pieces of a problem and share tasks, which could also involve collective intelligence, though it does not need to. For example, while engaged in crowdsourcing, people could contribute data or work on tasks but may not even interact with other people. In other words, the crowd members are not individually offering any specialized knowledge; rather, in crowdsourcing, the idea is that each person could conduct the same tasks and do it relatively similarly. The crowd can do more, faster, because there are so many people helping out. Collective intelligence is related more to finding out answers and solutions to problems that rely on people knowing different or complementary aspects of the answer and fitting those pieces together like a puzzle, or even more synergistically, such that the answer could be generated from more than the sum of its individual people. Moreover, a group of people could be working together intelligently but not necessarily crowdsourcing a solution to a problem. Thus, collective intelligence and crowdsourcing can work in tandem to help solve puzzles, or they can be completely separate phenomena that do not rely on each other.

Finally, there’s not always wisdom in the collective. For instance, a few years ago, when polled to name a new boat, the audience chose “Boaty McBoatface” rather than a more appropriate name. And certainly, popular decisions are not always the best decisions or the most effective solutions. One issue, called the “tragedy of the commons,” explores how the majority opinion can overwhelm the needs of the minority or the really innovative ideas that do not yet have mass appeal. Mainstream tastes could push away the necessary work at the margins, and more unique solutions can be outvoted. Moreover, smaller, but vocal, groups can mount a well-organized push to affect the results of various crowd activities, whether it is the Time Person of the Year (see, e.g., when Kim Jong Un was winning), ratings of a new book on Amazon (see, e.g., Hillary Clinton’s 2017 book on the presidential election Amazon book page), or a knowledge game of the future. Designers of knowledge games need to properly incorporate the usefulness of crowd interactions into these games while also tempering its drawbacks, such as the obscuring minority needs or overlooking of unique innovations. Moreover, designers and researchers need to create and test games that minimize the possibility that certain crowds could make efforts to nefariously affect results or manipulate certain outcomes for personal or political gains.

Why Games?

Why gaming and game experiences be integrated with crowdsourcing and collective intelligence-driven activities? What makes games possible spaces for these collective problem-solving activities, as well as ecologies for supporting new knowledge-making? In brief, this chapter identifies four potential strengths of games in knowledge production, as well as six weaknesses. As these types of knowledge games are a new type of experience, their strengths and limitations are still emerging, and there are many other possible benefits and drawbacks of these types of games beyond this initial list.

Games Are Played Frequently

First, over the past few decades, there has been an increase in video game playing. Approximately 59% of Americans play video games, and an average of 8 h a week is spent playing video games by the typical gamer (ESA 2014; Takahashi 2010). While playing games is not completely accessible to all demographics, it is relatively diverse (across gender, race, and economic background) and widespread (across the world), and it is a common and mainstream activity and one of the fastest growing forms of leisure and entertainment (Cross 2011). Around 63% of American households play video games for at least 3 h a week (ESA 2016).

Games Can Be Effective as Collective Problem-Solving Spaces

Games can serve as dynamic environments where people can come together to solve problems, in what is called a problem space (Jonassen 2000). Games can effectively simulate problems, the context for the problem, and the data, tasks, and other related information that is useful for solving the problem (Shaffer 2006). Games can help to support different types of problem solving, such as using distributed cognition or crowdsourcing or other forms of collective or collaborative work (Eseryel et al. 2014). In the game, many people of all different expertise levels and experiences (and all different locations and times) can be “leveled up” enough so that the players can maintain a common understanding that can help them work together effectively. Players can also potentially share expertise with each other (Schrier 2016).

Games Can Optimize the Strengths of People Alongside the Strengths of Technology

Games are able to bring together people with machines and optimize the strengths of each, such that they are working cooperatively and/or collectively to more effectively solve problems. Von Ahn (2005) calls this “human computation,” such that

the humans can work with the computers. Schrier (2017a), citing Hung (2013) and von Ahn (2005), explains that,

Human beings are effective at tasks such as pattern recognition and spatial manipulation, whereas computers are proficient at processing these tasks faster. Matching people and computers together, through a game, can possibly lead to new ways to approaching problems. In addition, technologies can be used to better connect human beings and help them work together more effectively. A group of people with diverse talents might be even more adept at problem solving together when they are supported across long distances by web-enabled technologies. A research team might be more able to complete larger amounts of tasks if they are delegated to a wider number of people through these technologies (p. 2)

Moreover, games can also help support person-to-person and group-to-group communication and collaboration, particularly across distance and time, ability, and expertise, as well as interest and specialty.

Games Are Motivating

Games are also potentially motivating and engaging, which can spur the expertise-building and expertise-sharing, in-game tasks such as data analysis or interpretation, exploration, and/or social interaction that is needed for complex problem solving (Schrier 2016). However, many of the knowledge games that are currently available are not creating the big-budget, commercial, professional, action-packed, and deep story-based experiences typical of triple AAA, entertainment-focused games such as *Call of Duty*, *League of Legends*, *Destiny*, *World of Warcraft*, or *Grand Theft Auto*. Not all game players are going to be motivated to play these types of knowledge games; in fact, many players may be motivated by other types of reasons than is typical of a video game, such as wanting to contribute to the social good, volunteer for a cause, or work on difficult scientific or social scientific problems with others.

Drawbacks

In addition, there are a number of possible drawbacks of using games for problem solving. These should be considered as researchers and institutions begin to use and design these types of games for knowledge-making and problem solving.

- 1. Flaws, biases, and values.** Just like any method for searching for knowledge, whether through surveys, ethnographies, film, or poetry, there are limitations to the knowledge that is produced and expressed. A game environment has flaws and biases, expresses particular values and constrains others, and is privy to the same systematic issues as any other cultural artifact or institution that is created by humans and living in a human world (Knorr-Cetina 1999; Flanagan and Nissenbaum 2014). Moreover, will games that solve problems about science be accepted in the same way as games that seek to solve humanistic or social scientific problems? How does culture shape how the game will be perceived, accepted, and considered? How does the game grapple with its own ethics?

2. **Games are framed as leisure.** It may be difficult for players to take games seriously because they are so often framed as being apart from work, even though they require quite a bit of labor (even games that are for entertainment purposes only). This means that players may not engage in the same way and that any knowledge or solution that arises from the game may not be trusted and vetted in the same way. Moreover, what happens when serious topics and problems, such as solving cancer, poverty, or homelessness, are converted into a “fun” game? Does this obscure the origin of the data or the emotional resonance, authenticity, and necessary nuances of the problem?
3. **Data analysis in games is still data analysis.** All the issues with data interpretation and data analysis that are encountered with any type of data-driven project are also applicable to games that use data-driven problem solving. For instance, boyd and Crawford (2012) discuss issues such as keeping people’s data from being used against them, as well as question how data will be used. They also argue that data is not objective but is framed and embedded with biases and values just like any other type of information (boyd and Crawford 2012).
4. **A crowd could alter results.** If enough players decide to work together to “game” the game, then they could affect outcomes and results. This is possible for any type of crowdsourcing or collective project – people could always lie or skew the results for certain purposes. However, games may be a particular target for this type of activity because of their cultural function, their mythologized role as so-called wild, free-for-all spaces, and some of their audiences desire to control these spaces and reconfigure them for their own needs.
5. **Are the gamers actually laborers?** Are the game players just having fun while engaged in the game or if they are solving real-world problems and working with real-world data and perspectives, actually doing something that is more akin to work? Postigo (2009), Fuchs (2010), and Terranova (2000) all argue that crowdsourcing, online activities, and gameplay of all kinds are types of work and creep into leisure time for the benefit of corporate profits and capital. At what point does the work done in a game become coercive? Can the design of a game that is particularly engaging be a type of coercion to complete certain tasks and do other’s work?
6. **Are these games really motivating for and accessible to all?** As mentioned earlier, not all gamers are going to want to play games that are about real-world problem solving. And game players will be motivated by different types of games, topics, or interactions. Moreover, games are still only played by those who have the necessary equipment, devices, and knowledge about how to play, as well as those who feel they belong in a games space. Thus, games are not accessible to all; therefore, any problem solutions or knowledge-making is not accessible to all.

What Is the Best Name for These Types of Games?

The name of these games matters. For instance, a name affects its use, accessibility, ethics, and acceptance, and frames how it is seen (Eitzel et al. 2017) There have been many terms used and applied to these types of problem-solving games, yet no one

single term has emerged. Schrier (2017a) identifies the most popular names of these games in the research literature and begins to explore future steps, such as considering how different names connect to different types of in-game problems or topics or investigating what the players and creators of these games are called as well.

This chapter uses the term knowledge games to distinguish these games from other types of games and game processes (such as gamification). As noted above, knowledge games describes games that seek to produce new knowledge about the world using processes such as participation from multiple players and crowdsourcing of ideas and data. However, other terms could have been used, and each term has strengths and weaknesses.

Table 1 describes the initial pros and cons of the current names used (based on work in Schrier 2017a), as well as related terms. For a more in-depth discussion of the naming of these types of games, please see Schrier (2016, 2017a).

Categories of Games Explained and Examples of Games

This chapter proposes a tentative label for these games – knowledge games – but what are the subcategories of these types of games? This section puts forth an initial typology for better organizing, analyzing, and designing of these types of games (for more about the creation of the typology, see Schrier 2017b working paper). There are very few knowledge games that have thus far been created and implemented, and their effectiveness in creating new knowledge varies greatly. One goal of this chapter is to use the typology to illuminate the gaps in the use and understanding of knowledge games to better design for the future.

How can similar types of games and phenomena, such as crowdsourcing, be applied to create a typology for knowledge games? First, this section considers Brabham's crowdsourcing typology, which focuses on four categories of crowdsourcing activity related to the types of problems a particular site or organization seeks to solve (Brabham 2013). Brabham's four categories are as follows:

1. **Knowledge-discovery and knowledge-management approach:** The knowledge-discovery and knowledge-management approaches involve some type of knowledge that is already out there, which a crowd is able to share and report on such that everyone can know it and it can be used for further analysis or action. One of the examples of this could be the Waze platform, which is an app and website run by Google that enables people to report traffic jams, construction incidences, and even cop checkpoints, such that other drivers can make better judgments on the best route at the time. For instance, one of my students mentioned that his father, a bus driver, uses the Waze app to plan out his routes and he also shares information through the app for fellow drivers. Citysourced is another example; it is an app that enables the public to report non-emergency issues related to one's city, such as environmental problems or quality of life issues.
2. **Broadcast-search approach:** In the broadcast-search approach, an organization has an assumption that there is someone out there, or even a group of people, that

Table 1 Walk-through of alternative names for knowledge games

Possible term	Strengths	Weaknesses	Reference
Games for change	Points to the idea that these games seek to cause change in the real world	The term is based on the Games for Change organization and is broader. Many of these games spur change outside the game but do not necessarily make the change through the game itself	www.gamesforchange.org
Engagement games	These types of games enact Real-world processes through the game	These games seem to encompass many more forms of social action (such as activism), rather than just knowledge-building and problem solving	Gordon et al. (n.d.) http://engagementlab.emerson.edu/pdfs/engagement-game-guide.pdf
Games with a purpose (GWAP)	Suggests there is a specific goal or higher purpose to the game	May be too broad, since all games have some type of purpose, such as entertainment or social good	
Human computation games	Suggests that human beings and computers are working in tandem	May be intimidating in its use of “computation,” suggesting there is a technical quality or aspect to the game and to participation in the game. Also, not all of these games involve both computers and humans in tandem with each other; games could be analog	Luis von Ahn (2005)
Citizen science games	Suggests that all people can participate, and there is some type of scientific knowledge created	This term focuses too much on science rather than other types of knowledge	Kevin Crowston
Citizen games	Suggests that all people can participate	The term might suggest that the games are focused on citizenship, civic needs, or social studies skills, rather than all types of knowledge and skills	

(continued)

Table 1 (continued)

Possible term	Strengths	Weaknesses	Reference
Crowdsourced games	Suggests using a crowd to support the pursuit of knowledge	The term crowdsourcing is used in many different ways in research and may be applied erroneously. Also, not all of these games rely on crowdsourcing per se but perhaps related activities	
Innovation games	Suggests change, growth, and contribution to knowledge and is broad enough to include different types of knowledge	This term may be biased for progress and newness, rather than finding the most effective solution or addition to knowledge	
Knowledge games	Suggests that the purpose of the game is to produce and/or use knowledge and contribute to a body of knowledge	May be conflated with learning games, such that the games are about building a knowledge of things that are already known, rather than adding to that which is not yet known and/or using this to make changes outside the game	Schrier (2016)
Social participation games	Definition of these games suggests a shared activity	The definition may be too broad in that it describes games that have any type of real-world action or counterpart	Jane McGonigal (2011)

knows something important and/or can solve something that is still as yet unsolved. An example is Innocentive? To some extent, this might be how to categorize Unilever's IdeaBounty, as it is a crowdsourcing platform that enables the public to submit ideas for a new campaign for a snack food brand that they own called Peperami. Unilever is using this platform to search for a "gem" of an idea – a needle in a haystack – of many, many possible ideas of how to best position their brand.

3. **Peer-vetted creative-production approach:** In the peer-vetted creative-production approach, people are encouraged to create and curate ideas, pieces of art,

photography, video clips, clothing, and other objects and products. Another example of this is Snapwire where people who take photos are matched with those looking to buy images. People can request specific types of images, and the winning photographers who meet those requirements will earn money for their images. In SomePitching, the public can both submit new business ideas and pitch them, and they can also vote on others, to see which ones win the pitching competition and potentially come to fruition.

4. **Distributed human intelligence tasking approach:** In the distributed human intelligence approach, an organization delegates various tasks to a crowd of people such as data collection, tagging and annotation, or even artistic creation, such as an ecosystem like Amazon's mechanical Turk. The tasks are typically ones that are better accomplished by a human rather than a machine. An example of this approach might be DIY history, where the public can help transcribe historical documents from, for example, American civil war diaries to old handwritten cookbooks and other handwritten artifacts. Another example might be planet hunters, where people perform tasks to help find extrasolar planets by looking at images taken by the Kepler space mission and judging patterns of brightness.

Brabham's typology is clear, but there are some concerns. One is that many of the categories could be applied also to collective intelligence and the examples could fit in either – in that each example uses not only crowdsourcing but also collective intelligence to meet its goals – making these terms even more conflated. Another concern is that many so-called crowdsourcing projects might overlap multiple categories. For example, in 2011, Kevin Macdonald made a 95-minute documentary film that he composed from 80,000 clips submitted to him of what was happening on a specific day from people around the world. To some extent, the task of creating this video was distributed, in that people were individually tasked with filming a portion of the video. On the other hand, you could argue that it was also peer-vetted and curated, in that Kevin Macdonald and a large group of film students picked out specific video clips to use. Likewise, you can argue that there is a broadcast-search aspect to the project, in that he was searching for different perspectives that are out there, such that he could compile them and incorporate them into his video.

Related to this concern of overlapping categories is another concern, which is that the typology could conflate goals that need to be solved with the way the public or organization works together to solve it. In knowledge discovery and management, discovering knowledge out in the world is the goal, but in the second type, broadcast search, knowledge discovery is also the goal. The only difference is that in knowledge discovery, the assumption is that the knowledge is already out there potentially in all of us, whereas in broadcast search, the assumption is that there is a special person with knowledge out there that needs to be found or people with particular abilities to solve problems that need to be included. Similarly, the distributed human intelligence approach describes how people can help to complete tasks that human beings are better at than machines. However, this is true about all of the categories, whether it is people taking images in SnapWire or people contributing ideas in IdeaBounty or people noticing traffic jams in Waze.

On the other hand, Brabham's typology of crowdsourcing projects provides a useful starting point for thinking about the advantages and disadvantages of different projects, the overlaps, how to meet organizational and public needs, and the types of projects that can be created in the future. The typology appears to be comprehensive in that current crowdsourcing projects seem to fit into at least one of the categories Brabham outlines. Moreover, the focus on the goals and strategies that an organization can take when crowdsourcing or developing crowdsourcing-like projects is useful for outlining what is currently possible in crowdsourcing.

Knowledge Games Typology

Just as with crowdsourcing projects, there are many ways to categorize knowledge games (Schrier 2016, 2017b). This chapter proposes one possible typology, building in part on Brabham's typology. For a more in-depth investigation of how this typology was created, please see Schrier (2016, 2017b).

Similar to Brabham's crowdsourcing typology, this proposed knowledge games typology focuses on the primary goals and functions that an organization, person, or center seeks to solve in relation to knowledge production or problem solving. The assumption is that one of the goals of any knowledge game is some type of knowledge production, solution, and/or change in the understanding of the world. This typology breaks this down further into possible ways that accomplish this overarching goal, similar to Brabham's typology, in that some organizations seek to find that needle in a haystack and others look to gather as many people as possible to complete tasks and subtasks to meet an overall goal.

As more knowledge games emerge, this proposed typology should continue to flexibly evolve and be further vetted empirically and be open to new categories. This scheme should not be used to limit the types of knowledge games created in the future but rather should help to understand where the gaps exist and what types of knowledge games might be generated in the future. The current four categories are as follows (adapted from Schrier 2016, 2017b):

1. **Cooperative contribution games.** Cooperative contribution games are types of knowledge games that enable players to collectively contribute a task or activity, similar to the distributed human intelligence tasking category in Brabham's typology, except that those activities take place within a game experience. For example, through a game, people might work on annotating images, recording or analyzing data, or identifying objects, such as bugs or birds, as in the case of *Happy Moths*. People may cooperate in doing this (in that people are all contributing to the same cause but not directly interacting) or collaborate (in that people are directly interacting on some of the tasks). There may also be competitive aspects to the game, such as competing to get the most points to end up on the leaderboard, even if there are also cooperative or collaborative elements in the game. Typically in this type of game, there are answers that may be more "right" or at least more accurate and useful, which earn more points or have more value,

versus those that are more “wrong,” which may reduce one’s points or standing. Feedback is usually provided as to whether tasks are done correctly or incorrectly or whether answers are more or less correct. An example of this type of game could be *ZombiLingo*, a French game that invites players to annotate sentences and parts of sentences, such as by labeling the auxiliary verb in the sentence.

2. **Analysis distribution games.** In analysis distribution games, each player is considered a useful contributor to the understanding of humanity, and each person is encouraged to provide ones unique perspectives, analyses, and perceptions to a body of data. In this sense, the game becomes almost like a research study but in a more game-like experience. For example, people might be asked to provide their perceptions of different colors, in the case of *Apetopia*, such that the game explores how different human beings perceive different types of colors. In this type of game, there are not necessarily answers that are clearly right or wrong; rather, the data collected is used to answer an open question about humanity and the world around us. An example of this is *JeuxdeMots*, which asks people to associate different terms in French such that the game can investigate how people map words. This information will help to build a semantic network or relationships among concepts or words.
3. **Algorithm construction games.** The purpose of algorithm construction types of knowledge games is to create an algorithm, or series of steps, such that a computer (or person) can then repeat those steps for further processing. For example, a computer might not be able to fully understand the steps that are typically taken in a restaurant such that it could automatically generate future actions or predict what a person might do next. By understanding the complex steps typically taken in a restaurant, a computer could learn how to predict next steps and serve up new, logical scenarios (such as in the case of the *Restaurant Game*). An example of this is *Foldit*, where people are working on manipulating proteins in different ways such that they can teach a computer the steps to folding various proteins, where a computer can then take those steps and predict future protein structures, or people can use the newly updated algorithm database in tandem with other information to help, for example, create new drugs for HIV/AIDS, in the case of a protein structure recently solved by *Foldit* players.
4. **Adaptive-predictive games.** Adaptive-predictive games are knowledge games that take any data, inputs, perspectives, and/or algorithms generated (as in what is played in the games from the other categories) and then model and/or use this information to adapt the game in some way and/or make predictions on how the game will be played. Thus, the game changes based on how people play through the game and as new knowledge is added. These types of games can readily adapt to spur real-world social, individual, or scientific changes, for example. There are no known knowledge games like this at the time, though *SchoolLife* comes the closest to this category because it learns about bullying responses from the game player and then adapts its subsequent responses based on this information. Moreover, there are many games that adapt to the player and their gameplay. For instance, many math games change in difficulty based on how the game player is completing the math questions and tasks; and other types of games such

as *Nevermind* can adapt to the player's heart rate and other biometric data. This category could be further subdivided by games that adapt based on individual player inputs versus those that adapt based on collective knowledge gained from the players.

The next section provides a detailed analysis of two knowledge games to better illustrate the concept of knowledge games and to illustrate how to use this typology. Moreover, this chapter uses these games to help reveal how to better innovate knowledge production using connected gaming platforms. The two games are *ARTigo* and *Nanocrafter*.

ARTigo

ARTigo is an online game to support social tagging of images, which was developed by Dr. Gerhard Schön from the IT-Group Humanities in Germany, as well as a number of partners from German institutes. *ARTigo* is directly inspired by Luis Van Ahn's *ESP Game*, which was bought by Google in 2011 and converted into the Google Image Labeler. In the *ESP Game*, participants are asked to help label images or provide metadata for images so computers can search through a database more easily. In the game, participants are randomly assigned to a partner and need to "guess" which tags ("strings") the other person is applying to a particular image, which they both see. If the two partners agree on the tags for the image, then they each get points. The "string" that the players typically agree becomes a potentially good label for a given image, according to von Ahn and Dabbish (2004).

Likewise, in the *ARTigo* game, people are presented with different pieces of art and asked to freely label it with different tags. If a person tags the piece of art the same as their partner, they will receive more points than if they tag it something unique. Moreover, the tagging process is timed.

The overall goal of *ARTigo* is to appropriately tag different pieces of art such that they can be more easily searched and accessed by the public. Only those tags that have been entered multiple times will be associated with a specific piece of art, such that the crowd is actually checking and double-checking itself for accuracy.

ARTigo could be considered a cooperative contribution game in that there are more right or quality answers or tags and the game helps to enable multiple people to complete the task of tagging different pieces of artwork. The overall purpose of the game is to complete a larger task, tagging artwork to make it more searchable, particularly because that task would be so onerous for one person or one group of people. However, this same game could be considered an analysis distribution game if the goals of the overall project were slightly different. For instance, *ARTigo* could be used to understand how different people perceive different pieces of artwork and, therefore, learn more about human perception of art and human visual perception or forms of taxonomy. Thus, depending on the use of the game, a knowledge game could straddle two different categories or be placed in one or the other.

Nanocrafter

Nanocrafter is created by the makers of *Foldit*, including Seth Cooper and Zoran Popovic, and a variety of researchers, designers, artists, and programmers from the University of Washington. The overall goal of *Nanocrafter* is to help players build the skills necessary to construct and engineer DNA nanotechnology to eventually be able to design and evaluate ones for a variety of purposes.

To do this, in *Nanocrafter*, players needed to construct DNA nucleotide strands based on a series of rules. For example, cracked or broken nucleotides need to be bonded to another nucleotide of the same color vertically. Nucleotides of different colors can connect to each other to make longer strands. Those nucleotides with a gold star can be “freed” by breaking apart the nucleotides (breaking the bond between them) such that the nucleotide is now on its own.

Once the tutorial is complete, players can follow the rules and construct their own engineered nucleotide strands. They can also begin accessing various challenges, which vary in difficulty and type and include things like “invent a system of molecules that behave like a wheel rolling down a track” or, the more obscure, “create a system of one or more logic gates whose inputs and outputs are circular strands.”

In the knowledge game taxonomy above, *Nanocrafter* could be considered an algorithm construction game. This is because *Nanocrafter* enables players to generate possible steps to creating a DNA circuit or molecule to meet particular needs, which could then be stored, used, and processed in tandem with other people’s solutions. In addition, the game could be considered as an analysis distribution game if it were used to consider and reflect how different people might approach the same problem and use those different approaches to solve a larger issue.

The game gives players the opportunity to directly learn the rules and skills necessary for *Nanocrafter* by enabling hands-on play within the actual problem-solving environment. The game also tests skills with a variety of authentic challenges, although currently there are no challenges with real-world applications as of yet. Moreover, *Nanocrafter* uses the principles of collective intelligence, whereas tools, skills, and knowledge are shared and distributed, and groups of people can work together to solve future problems.

Conclusion

This chapter has sought to contextualize and define knowledge games and explore related intersecting trends, such as crowdsourcing, gaming, and collective intelligence. It explored the potential strengths and weaknesses of this intersection, such as the ethical, social, and cultural ramifications of these types of games. A typology of knowledge games was described to help make more transparent the current issues and gaps related to these games. The initial typology includes four categories (cooperative contribution, analysis distribution, algorithm construction, and

adaptive-predictive). Some knowledge games may fit into more than one category or may fit more squarely in one category.

Two knowledge games were identified and explored in-depth as examples. Based on these examples, and in looking at the types of available knowledge games today, there may be new ways to gain knowledge and learn about ourselves that are currently missing from the proposed typology. Categories may still need to be refined, and new subcategories may need to be created. For example, algorithm construction might be subdivided into those games where players construct, build, and test hypotheses versus those games where players interact, express, and communicate. Both games might lead to new algorithms but with very different types of gameplay. With cooperative contribution games, one new subdivision may include those games that invite the direct recording of data from the world, while another may include those that ask for personal opinions or perspectives.

Currently, however, there are no knowledge games that collectively adapt and change in real time, based on the player's input, or based on collective knowledge from the player user-base. This may be an area of growth and further research. Moreover, very few of the current knowledge games investigate humanistic and social scientific problems or seem to approach scientific and other problems using the full interdisciplinary complexity needed for today's and the future's pressing needs and "wicked problems" (Introne et al. 2013; Schoder et al. 2014).

Next Steps

Further research is necessary to empirically test these categories and to help in evaluating the goals, effectiveness, and design patterns for knowledge games. More broadly, it is still an open question as to whether the games that encourage "crowdsourced" and collective problem solving, perspective sharing, and data collection can be used effectively to solve scientific, social, and humanistic problems and make effective, real-world change. Can games help to reveal new perspectives on social and scientific problems and to better model global and individual crises? And through trying to solve these problems, will they also spur new problems and needs? How are knowledge games and other related participatory media changing how knowledge is produced, distributed, and managed? These questions will become more salient in the near future.

References

- boyd d, Crawford K (2012) Critical questions for big data: provocations for a cultural, technological, and scholarly phenomenon. *Inf Commun Soc* 15(5):662–679
- Brabham D (2013) *Crowdsourcing*. MIT Press, Cambridge, MA
- Cross T (2011) All the world's a game. Published online on 10 Dec 2011, <http://www.economist.com/node/21541164>
- Eisenstein E (1979) *The printing press as an agent of change*. Cambridge University Press, Cambridge

- Eitzel MV et al (2017) Citizen science terminology matters: exploring key terms. *Citizen Sci Theory Pract* 2(1):1–20
- Entertainment Software Association (ESA) (2014) 2014 Essential facts about the computer and video game industry at http://www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf
- ESA (2016) Essential facts about the games industry. Entertainment software association, <http://essentialfacts.theesa.com/Essential-Facts-2016.pdf>
- Eseryel D, Law V, Ifenthaler D, Ge X, Miller R (2014) An investigation of the interrelationships between motivation, engagement, and complex problem solving in game-based learning. *Educ Technol Soc* 17(1):42–53
- Ferrara J (2013) Games for persuasion: argumentation, Procedurality, and the lie of gamification. *Games Cult* 8(4):289–304
- Flanagan M, Nissenbaum H (2014) Values at play in digital games. MIT Press, Cambridge, MA
- Fuchs C (2010) Class, knowledge, and new media. *Media Cult Soc* 32(1):141
- Gordon E, Walter, Suarez (n.d.) Engagement games: a case for designing games to facilitate real-world action. <http://engagementlab.emerson.edu/pdfs/engagement-game-guide.pdf>
- Howe J (2006) The rise of crowdsourcing. *Wired*. Published June 2006, Accessed on 24 Feb 2015. <http://archive.wired.com/wired/archive/14.06/crowds.html>
- Howe J (2008) Crowdsourcing: why the power of the crowd is driving the future of business. Crown Publishing, New York
- Hung W (2013) Team-based complex problem solving: a collective cognition perspective. *Educ Technol Res Dev* 61:365–384
- Introne J, Laubacher R, Olson G, Malone T (2013) Solving wicked social problems with socio-computational systems. *Künstl Intell* 27(1):45–52
- Jenkins H (2006) Convergence culture: where old and new media collide. NYU Press, New York
- Jonassen D (2000) Toward a design theory of problem solving. *Educ Technol Res Dev* 48(4):63–84
- Keartland H (2014) Space gaming is seriously boosting cancer research. *Pioneers Post*. Published on 29 Oct 2014. <https://www.pioneerspost.com/news-views/20141029/space-gaming-seriously-boosting-cancer-research>
- Khatib F, DiMaio F, Foldit Contenders Group, Foldit Void Crushers Group, Cooper S, Kazmierczyk M, Gilski M, Krzywda S, Zabranska H, Pichova I, Thompson J, Jaskolski M, Baker D (2011) Crystal structure of a monomeric retroviral protease solved by protein folding game players. *Nat Struct Mol Biol* 18:1175–1177
- Knorr-Cetina K (1999) Epistemic cultures: how the sciences make knowledge. Harvard University Press, Cambridge, MA
- Landwehr P, Spraragen M, Ranganathan B, Carley K, Zyda M (2012) Games, social simulations, and data – integration for policy decisions: the SUDAN game. *Simul Gam* 44(1):151–177. <http://journals.sagepub.com/doi/full/10.1177/1046878112456253>
- Lévy P (1997) Collective intelligence: mankind's emerging world in cyberspace. Perseus Books, Cambridge, MA
- Lieberoth A, Pedersen M, Marin A, Planke T, Sherson J (2014) User acquisition, engagement and early results from the citizen cyberscience game quantum moves. A midstream report (working title). *Hum Comp* 1(2):219–244
- McGonigal J (2011) Reality is broken. Penguin, New York
- Malone Bernstein (2015) Handbook of collective intelligence. MIT Press, Cambridge, MA
- MIT (n.d.) MIT Center for collective intelligence. http://cci.mit.edu/about_mitcenter.html
- Plass JL, Homer BD, Kinzer CK (2015) Foundations of game-based learning. *Educ Psychol* 50 (4):258–283
- Postigo H (2009) America Online volunteers: lessons from an early co-production community. *Int J Cult Stud* 12(5):451–469
- Schoder D, Putzke J, Metaxas P, Gloor P, Fischbach K (2014) Information systems for ‘wicked problems’ – research at the intersection of social media and collective intelligence. *Bus Inf Syst Eng* 6(1):3
- Schrier K (2014) Introduction. In: Schrier K (ed) Learning, education and games vol 1: curricular and design considerations. ETC Press, Pittsburgh, ADD

- Schrier K (2016) Knowledge games: how playing games can solve problems, create insight, and make change. Johns Hopkins University Press, Baltimore
- Schrier K (2017a) What's in a name? Naming games that solve real-world problems. In: Proceedings of the foundation of digital games conference '17. ACM, Hyannis
- Schrier K (2017b) Investigating typologies of games as research environments. Working paper
- Shaffer D (2006) How computer games help children learn. Palgrave Macmillan, New York
- Squire K (2011) Video games and learning: teaching and participatory culture in the digital age. Teachers College Press, New York
- Surowiecki J (2005) The wisdom of crowds. Random House, New York
- Takahashi D (2010) "Time spent playing video games keeps going up" in Venturebeat.com. Accessed at <http://venturebeat.com/2010/03/02/time-spent-playing-video-games-keeps-going-up/>
- Tapscott D, Williams A (2006) Wikinomics: how mass collaboration changes everything. Portfolio, New York
- Terranova T (2000) Free labor: producing culture for the digital economy. Social Text 18(2):33–58
- von Ahn L (2005) Human computation. Thesis, Carnegie Mellon, Pittsburgh
- Von Ahn L, Dabbish J (2004) Labeling images with a computer game. In: Proceedings of the annual ACM CHI conference, Vienna, 24–29 April 2004
- Wouters P, van Nimwegen C, van Oostendorp H, van der Spek ED (2013) A meta-analysis of the cognitive and motivational effects of serious games. J Educ Psychol 105(2):249
- Zhao Y, Zhu Q (2012) Evaluation on crowdsourcing research: current status and future direction. Inf Syst Front 16(3):417–434



Big Data Approaches to the Study of Digital Media

52

Ralph Schroeder and Josh Cowls

Contents

Introduction	958
Big Data and Research on New Information and Communication Technologies	958
Facebook	960
Twitter	964
Wikipedia	966
Advantages and Disadvantages	969
References	974

Abstract

Recently there has been much excitement about using big data in social research, especially data derived from digital media. This chapter examines leading examples of this type of research from three platforms: Facebook, Twitter, and Wikipedia. It discusses their findings, data sources, and claims to validity. The aim is to assess how a number of landmark studies advance on existing social science research, pushing it in the direction of a more quantitative and more scientific mode of research. The chapter argues that this more scientific approach has advantages and drawbacks: on the positive side, for example, it often makes for rapid cumulative advances in knowledge. On the negative side, several of these studies are poorly theorized in terms of how these platforms fit into existing theories and research about the uses of information and communication technologies. The chapter goes on to examine how big data fits into the advance of social science, arguing that research technologies, quantification, and new sources of

R. Schroeder (✉)

Oxford Internet Institute, University of Oxford, Oxford, UK

e-mail: ralph.schroeder@oii.ox.ac.uk

J. Cowls (✉)

The Alan Turing Institute, London, UK

e-mail: jcowls@turing.ac.uk

data are key drivers of research fronts. The chapter concludes with reflections about how these advantages and limitations shape how these studies are used and how they will (or will not) fit into the disciplinary landscape of the social sciences, and the study of media and communications in particular.

Keywords

Big data · Social science · Social media · Internet studies · Media and communications

Introduction

There has been much excitement about using new media and big data in social research. This chapter will examine three examples of such research – about Twitter, Facebook, and Wikipedia – in order to weigh the challenges and opportunities of using big data in studies such as these. The chapter will locate the study of these new media in the wider study of digital media. It will argue that these three cases highlight a new direction in the social sciences: an increasing scientization. The chapter will argue that this has advantages and disadvantages, focusing not so much on issues of data access and privacy (though these will be noted in passing), but on epistemological and theoretical issues: on the one hand, an increasingly quantitative and scientific approach allows for the powerful testing of theories; on the other, digital media are poorly theorized in terms of how they fit into or depart from existing information and communication technologies. Furthermore, the application of research to short-term applied problems within limited domains also has drawbacks. The chapter will point to some ways of overcoming these lacunae.

The chapter proceeds as follows: first, it will provide a definition of big data and a rationale for focusing on the examples of Twitter, Facebook, and Wikipedia and for selecting particular studies about these three. Next, it will give a brief account of key findings from these studies, highlighting how the data were analyzed and where the findings fit with and advance on previous research. At this point, it will be possible to put these studies into a broader context: the distinctiveness of the data-intensive approaches of these studies, it will be argued, lies in their quantitative and scientific approach, raising anew long-standing debates about the scientific nature or otherwise of the social sciences. This scientific approach also has implications for how these studies can be used, in predicting behavior and influencing it. In the conclusion, the benefits and limitations of this new direction in the social sciences will be weighed.

Big Data and Research on New Information and Communication Technologies

Much work using the terminology of “big data” does not provide an exact definition (e.g., Manyika et al. 2011, box 1). Here, “big data” is defined as research that represents a step change in the scale and scope of knowledge about a given

phenomenon (Schroeder 2014a, 2015). Note that this definition does not rely on “size” per se, but on how size in relation to the object being investigated advances beyond previous research on this type of object. As we shall see, this has implications for how advances in social science can be gauged and presumes a realist and pragmatist epistemology (Hacking 1983; Schroeder 2007) because the definition requires that there is an object “out there” (realism) about which more useful or powerful knowledge has been gained (pragmatism). Further, the “big data” that are the focus of this chapter “belong to” the object of study and exist prior to analysis: as Hacking puts it, the view that “all data are of their nature interpreted” is misleading; “data are made, but as a good first approximation, the making and taking come before interpreting” (1992, p. 48). He adds, “it is true that we reject or discard putative data because they do not fit an interpretation, but that does not prove that all data are interpreted” (1992, p. 48). He also distinguishes data from other parts of the scientific process, such as the calibration of instruments. Nothing hangs on these arguments for the moment, and they will be revisited later. It should be noted, however, that this definition already anticipates our conclusion, which is that, even if big data is a leading research front, there are two limits: one relates to how the findings about the phenomena in question fit with and advance beyond our existing knowledge about the social implications of information and communication technologies, and the second relates to the sources of data, which have a limited significance (and in some cases restricted access). We will return to these points: at this stage, all that is needed for our argument is that the examples we present fit the definition. Thus it will be necessary to point out how, for each example, the size of data in relation to the phenomenon investigated constitutes a step change from previous data analysis about this or similar phenomena.

Big data has been typically used to refer to “born digital” data. As we shall see, this clearly applies to the examples discussed, though in the case of the Bond et al. (2012) and Kramer et al. (2014) studies of Facebook, researchers were also able to “create” a new source of data: they modified the content that appeared on the platform for different groups in a kind of “natural” or quasi-experiment. Yet with these two partial exceptions (“partial,” because the experiments took place in the given “natural” setting of Facebook), born digital data are unlike other data inasmuch as researchers did not decide what to collect; they collected what was available and then manipulated these data by means of statistical methods. Again, we shall see that this has implications for what constitutes an advance in research.

Recently there has been a rapid increase in the uses of such “born digital” big data, for example, using search query logs (Waller 2011; Segev and Ahituv 2010). There are also books aimed at a wider audience using these data (Tancer 2009; Silver 2012) and examining the legal and privacy implications (Mayer-Schoenberger and Cukier 2013; O’Neil 2016). This chapter will not provide a comprehensive review of big data research in the domain of new media, nor will it cover uses of big data outside of social media (such as data collected at shopping tills, from sensors, or from mobile phone geolocation; see Eagle and Greene 2014; Ekbja et al. 2015; Golder and Macy 2014). Instead, we focus on digital media research relevant to Internet studies. The disciplinary boundaries of Internet studies are of course fluid

and involve several social sciences. However, our scope is bounded by the social study of information and communication technologies.

We have chosen to focus on Facebook, Twitter, and Wikipedia. There are of course many other digital media platforms about which social science research is undertaken (LinkedIn, YouTube, Reddit, and others). One reason for choosing Twitter, Facebook, and Wikipedia is that these are among the prominent social media (van Dijck 2013); Facebook's more than a billion users, Twitter's hundreds of millions of users, and billions of visits each year to Wikipedia (driven in part by its articles consistently ranking among the most highly visible search results) yield an enormous volume of interactions with – and between – users. Moreover, these platforms are distinctive in terms of their functions and features, and as a result, the digital data they yield affects the kind of research that can be conducted in ways relevant to our argument. Finally, research on these three platforms has experienced rapid growth; one indication of this is that there are already guides to research in this area (Wilson et al. 2012; Bruns and Liang 2012; Weller et al. 2013; Okoli et al. 2012; Schroeder and Taylor 2015) even though these technologies are quite new (Facebook was founded in 2004, Twitter in 2006, and Wikipedia in 2001). Thus, while the studies focused on here have been chosen for their distinct characteristics and influence on the field, they are but a few leading examples of a far larger, and still growing, body of studies (Meyer and Schroeder 2015; Meyer et al. 2016).

A further criterion for selection for the particular studies analyzed here is: do the examples discussed meet the definition of big data and contribute to social science? While many other studies of these platforms fall clearly within the definition of big data, the ones selected here not only make for insightful comparisons (with direct contrasts and links not only between studies of each platform, but also between them), but they also illustrate the range of challenges and opportunities of this type of research. A final criterion for inclusion is that these studies have received a considerable amount of attention, as gauged by how often they have been cited and how they enable further work to be built upon them.

The main question that will be addressed here is: what are the common challenges in this nascent area of research for social science? Here, again, the aim is not a systematic review of this work, but to highlight how some key early examples of this area illustrate the nature of big data research more generally and more importantly to assess how the quantitative and scientific approaches of these and other similar studies push the social sciences in a new direction – and with what effect? To do this, we examine three studies of each of the three platforms which highlight a range of issues in this area of research (see Table 1, Overview of papers discussed).

Facebook

Facebook is a social network structured on the basis of reciprocal relationships, where User A and User B must both agree in order for a “friendship” to be established. As will be seen, Facebook is therefore characterized by closer ties between users compared with Twitter and especially Wikipedia. As such, many

Table 1 Overview of papers discussed

Platform	Paper	Size of data in relation to phenomenon investigated	Theoretical question/practical aim	Key findings
Facebook	Backstrom et al. (2012)	69 billion friendship links between 721 million Facebook users	Reexamine Milgram's "six degrees of separation" online	Four degrees of separation on Facebook
	Bond et al. (2012)	61 million Facebook users	Experiment about how to mobilize voters	Voters can be mobilized via Facebook friends more than via informational messages
	Kramer et al. (2014)	689,003 Facebook users	Experiment manipulating emotional exposure	Exposure to positive (negative) content increases tendency to express positive (negative) emotion online
Twitter	Kwak et al. (2010)	1.47 billion directed Twitter relations	Is Twitter a broadcast medium or a social network?	Most use is for information, not as a social network
	Cha et al. (2010)	1.7 billion tweets among 54 million users	Who influences whom?	Top influentials dominate, but some variation by topic
	Barberá (2015)	1465 political elites and 856,307 politically engaged users	Can following networks be used to gauge political ideology?	Analysis of who users follow can predict ideology of politicians; exchanges typically take place among users with similar users
Wikipedia	Zhang and Zhu (2011)	Chinese Wikipedia editorial activity	Natural experiment about incentives to contribute	Contributors are influenced by public good notion, reduced contribution after blockage
	Yasseri et al. (2012)	Editorial activity on Wikipedia, especially reverts	Understanding conflict and collaboration	Types of conflicts can be modeled
	West et al. (2012)	Wikipedia contributions related to Yahoo! browsing	What characterizes Wikipedia contributors' information behavior compared to Wikipedia readers and non-readers	Wikipedia contributors are more "information hungry," especially about their topics

studies have set out to discover more about the structure of friendship on Facebook. For example, a number of researchers have used the Facebook network to see if they could reexamine the famous study by Milgram about “six degrees of separation.” In the Milgram study, carried out in the 1960s, Milgram reputedly showed that people are connected to each other, as measured by routing a message to an intended receiver, by “six degrees,” or six steps along a chain of a “friend of a friend.” This study has been widely discussed, and there have been a number of attempts to replicate the findings, offline (via the sending of postcards, as in the original study) and online within Microsoft’s instant messaging network (Leskovec and Horvitz 2008).

The study we can focus on here is Backstrom et al. (2012), which found “four degrees of separation” (or a distance of 4.74 between friends on the Facebook network, or 3.74 degrees of separation between them). Or, to put it in their words, “people are only four world [sic] apart, and not six: when considering another person in the world, a friend of your friend knows a friend of their friend, on average” – at least among Facebook friends. Backstrom et al. are careful to note the differences between friends on Facebook and the Milgram study: they say “the notion of friendship in Facebook is hardly comparable to the idea of friendship in real life; in particular, we cannot expect that all Facebook contacts are *first-name acquaintances*...but also the contrary is true...there will be many first-name acquaintances that are not on Facebook...these two phenomena will likely, at least in part, balance each other.” The authors say that their study is the “largest Milgram-like experiment ever performed” (recall our definition of “big data”) on the “largest ever electronic social network ever created” with ~721 million Facebook users and ~69 billion friendship links when the study was carried out in 2011. We can also note, however, that this study is not “an experiment” in the sense of controlling for and varying the conditions of study. Instead, it is a replication, by means of a larger object than in previous such analyses of social network relationships, of quantifiable relations between people. Note also, again anticipating our conclusion (which is also acknowledged by the researchers themselves), that the significance of the findings (four degrees of separation) depends on how much insight the findings provide about our mediated and networked relationships generally: what kind of medium is Facebook, compared with other media, and also compared to offline friendships or ties?

For our second example, we can take the study by Kramer et al. (2014) which claimed to have uncovered the workings of the transmission of emotional states between Facebook users. The researchers reduced the amount of positive content appearing in the News Feed of one group of users and reduced the amount of negative content appearing in the feed of another (both groups had associated control groups in which a proportion of content was omitted at random). Positivity and negativity were assessed in relation to whether or not posts contained a positive or negative word in a predefined linguistic corpus. The study analyzed 689,003 Facebook users and 122 million words in three million posts, which qualifies the study as having a larger data source than previous studies of “social contagion.” By comparing the posts that the treated users themselves produced following their

respective treatments, the researchers found a statistically significant effect: users who received the positive treatment were more likely to post positive content in their own status updates; the reverse was true for the negatively treated group. The authors therefore claim that “the results show emotional contagion . . . suggest[ing] that the emotions expressed by friends, via online social networks, influence our own moods.”

The paper caused great controversy (Schroeder 2014b), due to the perception that users’ emotional states were manipulated for the purposes of the study. Here, we point out that, unlike the Backstrom et al. study, this was an experiment (albeit a quasi-experimental one insofar as two groups with different conditions were created in a real-world context rather than a laboratory environment). A similar limitation applies, however, as with the study just discussed: what is the significance of how emotions are transmitted via this platform? And again, the findings are limited to what these data (positive and negative words) tell us about the emotional states of users who engage in mediated online relationships. Still, in relation to this transmission (“social contagion”), the study constituted an advance in the amount of quantifiable data used to determine to what extent the effect takes place.

Our third and final Facebook example is the study by Bond et al. (2012), who sought to find out whether a notice telling users that one or more of their friends had voted in an election was more likely to trigger someone to turn out to vote themselves, compared with a simple “informational” (advertising-like) message on Facebook urging them to do so. They sent out these informational messages with details about where to vote to one group, and a “social message” with where to vote plus a number of Facebook friends who had clicked a button to say that they had voted – to the other. In other words, the “social message” added social pressure to the information. These messages were sent to 61 million Facebook users during the 2010 congressional elections in the USA, again yielding a quasi-experimental study on an unprecedented scale. The study found that unlike the informational message, which generates no meaningful increase in votes, the message from Facebook friends does so to a statistically significant degree, and even more so in the case of close friends (“in the eightieth percentile or higher . . . of frequency of interaction among all friendships in the sample,” 2012, p. 296). The authors also estimate what percentage share of the total votes could have been added via social contagion in this fashion – 0.60% – which could be an important increase in a close election. They further note that although other studies have failed to show that online election appeals are effective, their enormous sample size, and the fact that they were able to carry out an experiment (sending two different messages), means that their results are possibly more powerful than previous research.

Several features of these three studies are noteworthy. First, they rely on data that is only accessible to a team of Facebook researchers. Hence at least one author in each of the three publications discussed here is from Facebook while others are from academia. Second, all three are centered on network analysis, a transdisciplinary area of research that has a long tradition in the social sciences and beyond, going back at least into the 1920s (Freeman 2004) and which has recently expanded with scholars from many disciplines (including especially physics and computer science) coming

together for conferences such as the annual Sunbelt Social Networks Conference (<http://www.insna.org/sunbelt.html>). Finally, even though they have quite different aims, they all contribute to a single fast-moving research agenda which is devoted to establishing the strength of online connections between people and how they can be exploited online (Backstrom et al., Kramer et al.) and offline (Bond et al.). This potential for exploitation or manipulation explains much of the critical popular response to the Kramer et al. emotional contagion paper (Schroeder 2014b), though much of the same criticism could be leveled at the Bond et al. voting effect paper – perhaps even more strongly, given that the effects of the latter take place offline, whereas in the former case, it is harder than the authors suggest to establish that it is emotion itself, rather than emotional expression, that is being transmitted between users.

A number of further comparisons will be made, but another feature of this research agenda is that the aim of identifying the strength of connections links both to well-established research traditions and questions (as mentioned), but it could also be seen as a rather pragmatic agenda (useful for Facebook and its uses), harking back to the pragmatism that is seen as a key characteristic of science here. However, as we have seen, this usefulness also has limitations: how much do the relationships uncovered (degrees of separation in a network, transmission of emotional states, and influence of messages on voting) on one platform tell us more generally about the social implications of information and communication technologies? The findings, insofar as they build on and advance existing network analyses and experimental work with quantitatively powerful work, are also constrained by whether Facebook is a network like others (in terms of degrees of separation – we can think here of how Facebook has changed the nature of users are linked as “Friends” and via newsfeeds) and to what extent the conditions created in the quasi-experiments obtain on this and on comparable networked platforms (in other words, how work on certain platforms and in “laboratory” conditions is generalizable).

Twitter

Twitter studies have also focused on online connections, which differ somewhat from Facebook since User A can follow User B without reciprocation, offering the possibility of asymmetries in relationships. Thus, a key question is whether Twitter is more like a social network between people (like Facebook) or if it is closer to a one-to-many medium for spreading information (like broadcast television)? Kwak et al. (2010) investigated precisely this topic and argue that it is more like the latter. They produced the “first quantitative study on the entire Twittersphere and information diffusion on it” and to do so “crawled 41.7 million user profiles, 1.47 billion social relations, 4262 trending topics, and 106 million tweets.” (Again, this fits our definition of “big data” when thinking about the number of relations examined.) What are these “social relations”? Social relations in this case are “1.47 billion directed relations of following and being followed,” which prompts the further

question about the nature of these directed relations; indeed, the authors pose this question in the title of their paper: “what is Twitter, a Social Network or a News Media?” However, this is a question that the authors of the study can only answer in a narrow way: they provide figures, for example, on how many followers users have (a power law distribution is found), how many relations are reciprocal versus unidirectional (among other findings, Twitter is less reciprocal than Flickr, a photo sharing service), and what proportion of users (approximately 2/3) are not followed by any of those who follow them: for the latter, Twitter is more a “source of information rather than a social networking site.” They can also rank the users by followers and establish that celebrities (such as Britney Spears or Oprah Winfrey), politicians (Barack Obama), and news (CNN, New York Times) were among the top 20 by number of followers. By further comparing the top “trending topics” on Twitter with topics on CNN Headline News, they found, among other things, that “more than half the time, CNN was ahead in reporting. However, some news broke out on Twitter before CNN.” In this sense, and for some events at least, Twitter is thus a news medium in the sense that it is ahead of traditional news media. Nevertheless, the evidence presented by this study is only suggestive; the debate over whether Twitter is more like a social network or a news medium – and the role that professional news organizations and journalists play on it – has continued (Hamby 2013; Hermida 2013; Benkler et al. 2017).

Cha et al. (2010) were also interested in “influence” in Twitter, both because there are established theories in sociology and marketing whereby a few key “influentials” can have a large effect via word-of-mouth (as we have seen with Facebook research) and also because it has often been noted, as in the Kwak et al. study, that a very small group of users have very large followings. Again, they examined a large data set: “2 billion follow links among 54 million users who produced a total of 1.7 billion tweets.” A key finding is about the “million follower fallacy,” as in the title of their paper: “having a million followers does not always mean much in the Twitter world...it is more influential to have an active audience who retweets or mentions the user.” Other findings include that, if examined over longer periods (here: an eight-month period in 2009), then mainstream news organizations consistently have a large number of retweets of diverse topics, whereas celebrities are more prominent among the “mentions” of their followers. Again, this advances knowledge about influence, but do these findings about how much influence is exercised via followers, retweets, or mentions compare with other media, both interpersonal and one-to-many?

Finally, a study by Barberá (2015) focused on the (partially) political nature of Twitter, investigating whether the asymmetric structure of the network can be used to gauge the political ideology of users on the platform. Crucial to this, as Barberá notes, is that political actors are very well represented on the platform; a plethora of legislators, candidates, and journalists all “interact within the same symbolic framework” with each other, as well as with ordinary users. This distinction between elite and ordinary users, facilitated by the asymmetric system of following, was operationalized by Barberá in order to estimate the ideological placement of politicians (1465 of them in this case) based on who follows them (865,307 politically engaged users). This is possible because, as Barberá argues, decisions about who to

follow “provide information about how social media users decide to allocate a scarce resource – their attention.” Thus, users make decisions over who to follow based on pre-existing ideological proclivities. Barberá indeed detects very strong correlations between this follower-informed model of ideological placement and traditional left-right measurement based on congressional voting records. Undoubtedly, the Twitter users included in this study are not representative of the general electorate: not merely because membership of Twitter is skewed on various demographic dimensions, but also because Barberá excluded from the sample users who follow less than three accounts of predefined political elites. (See Pew Research Center, ‘Demographics of Key Social Networking Platforms’, for evidence of how Twitter use amongst Americans varied on the basis of sex, race and age. Accessible at <http://www.pewinternet.org/2015/01/09/demographics-of-key-social-networking-platforms-2/#twitter>). Yet Barberá argues that “precisely because they are more likely to be knowledgeable and interested in politics than the average citizen, examining [these users’] online behaviour can be highly informative about policy positions.” The chapter therefore utilizes several features distinct to Twitter, such as the asymmetric network of following, the prevalence of political elites, and the volume of political content on the platform, as already seen in the other two Twitter studies. Hence the question of how this study provides broader insights relates not just to the interpersonal versus one-to-many question about the medium but also to how much findings about ideological alignment between politicians and their followers translate what we expect about this alignment more generally.

Overall, there are several noteworthy features of these three Twitter studies. First, in contrast to the Facebook research, these studies have not relied on special access to Twitter, though access has indeed become more restricted over time (Bruns and Liang 2012; Gonzalez-Bailón et al. 2014). Second, while these studies, as with the studies of Facebook, are about connections between people (though “users” would be more accurate for Twitter, since, e.g., news organizations are also “users”), here the emphasis is on information exchanges. This makes the study of social relations here rather narrow, as we have also seen in the case of the Facebook studies: these are “media” relations rather than two-way communications relations, although the line becomes hard to draw in the case where a user has a single follower, but the relation of information flow is still in one direction. Moreover, as with the Facebook studies, the aim is both to model previous offline phenomena in the online world and to see if it is possible to model how information, influence, and ideology work in this new context. Finally, again as with the Facebook studies, the question how this platform yields insights that compare with other media of all kinds arises.

Wikipedia

Unlike Facebook and Twitter, where research has been about social relationships and the flow of news, research about Wikipedia has concentrated on the large-scale collaborative effort to build a free-access online encyclopedia. Zhang and Zhu

(2011), for example, examined collaboration from an economics perspective for the Chinese-language version of Wikipedia, which has been blocked and unblocked on the mainland of China at different times. This blockage – or censorship – meant that the authors had a “natural experiment” (as distinct from the two Facebook quasi-experiments, since in this case, the conditions for testing were created by censorship): examining the number of contributors before and after blocks whereby they have a comparable “control group” outside the mainland that was not blocked. What they found is that after the contributions were unblocked, others who had not been blocked also contributed less because they no longer recognized themselves as part of a common collaborative effort (Zhang and Zhu 2011: 1601, 1602). This finding fits with the “free rider problem” in economics which centers on why people contribute to a “public good” when they know that others are providing this good in any case. And while this topic is usually researched with a small group of student subjects in a laboratory, the advantage of Zhang and Zhu’s research is that they were able to study this phenomenon on a large scale, and in the “natural” setting of a real-world task. As with the other studies, this study thus meets our definition of big data, though it is hard to translate to other media or online social interactions since, given its size, popularity, and form, Wikipedia is a unique medium (even if other studies of online behavior have examined collaboration, in this case the question of “media” censorship also sheds light on the well-studied topic of censorship).

Yasseri et al. (2012) took a different tack in understanding collaboration: examining conflicts between contributors. Conflict is studied by examining “edit wars” in “disputed articles” where contributors repeatedly override each other’s contribution because of the contentious nature of the subject matter (“abortion,” “George Bush,” “state of Palestine,” and the like). They focused on “reverts” among editor pairs, which are edits where the article is quickly restored to its previous condition before the revision – because the editor disagrees with the other editor’s changes. They selected conflict-ridden articles from a set of 3.2 million articles in English Wikipedia (again, clearly within the scope of our definition), arriving at the conclusion, among others, that a small subset of articles can be characterized as “never-ending wars”: from less than 1% (12,000 out of 3.2 million articles), there is an even tinier subset of 100 articles for which “no permanent, or even temporary, consensus gets ever built.” They also note that “it is a credit to the WP [Wikipedia] community that such cases are kept to a minuscule proportion.” Yet another implication is that these conflict-ridden topics absorb a disproportionate amount of editorial effort. Modeling Wikipedia can also be used for commercial purposes: in a related paper, Mestyan et al. (2012) demonstrate that the level of Wikipedia activity (including who reads Wikipedia) in relation to movies in the weeks running up to their release can predict box office success for American movies with a high degree of precision, higher precision than in the case of a study that used Twitter activity (Asur and Huberman 2010). In any event, the case of studying Wikipedia conflicts is revealing what kind of media content is most controversial, and in this sense, it can be likened to Barberá’s Twitter study (which is also about “ideology”), though as with Twitter,

questions have been raised about how representative the contributors to Wikipedia are, in terms of their demographics and political beliefs (Hill and Shaw 2013; Ford and Wajcman 2017).

The characteristics of Wikipedia contributors (or editors) were, however, addressed in our final Wikipedia example: West et al. (2012) could examine who Wikipedia contributors are because they had access to log data from the Yahoo! web browser for approximately 1900 editors and 5000 readers-only of English Wikipedia and also from 10,000 non-readers. (Note that these are not large numbers in themselves, in terms of our definition of big data, but the linking of two datasets – users and the content they view and edit – allows for an analysis of a very large dataset.) These logs of online activity certainly constitute “big data” on the definition used here). They found that Wikipedia editors have distinctive characteristics: “they are entertainment-loving and information-hungry” judging by how their web-browsing differs from readers-only and non-readers. This characteristic, they argue, could be explained by the large amount of content in Wikipedia that is devoted to popular culture, and also because editors need to find information online, but they further found that “not only do editors search more than average Internet users, they do so especially in the areas to which they contribute.” Again, there are implications for how Wikipedia editing activity is organized, especially as they have more detailed findings for different topic groups within Wikipedia and among novices versus experienced editors. These findings allow the authors to recommend that the Wikipedia organizers should continue to foster diversity among editors, also in order to encourage new editors and more contributions. But apart from the representativeness of Wikipedia contributors of wider populations, another question, again, is how the consumption of contention on a web browser (Yahoo!) and on Wikipedia provides wider insights about online behavior.

In this case, unlike with Twitter and Facebook, the data are completely accessible to researchers (though the Yahoo! data as used in the West et al. study was proprietary). Moreover, Wikipedia provides a testbed for studying how people work together where their task activity is taken as evidence of their relationships – rather than communication or information sharing between them as for Facebook and Twitter – though the editing of Wikipedia articles is arguably a mediated relationship and Wikipedia articles could be seen as media content. And here too research can be used to make improvements to Wikipedia itself (Yasseri et al. 2012) and to understanding contributors (West et al. 2012) as well as using Wikipedia to predict offline behavior (Mestyán et al. 2012). In other words, this research, as with the studies of Facebook and Twitter, has practical implications, both for Wikipedia and how Wikipedia can be used as a tool for marketing or for gauging how much attention might be paid to a real-world phenomenon (movies) that appears in Wikipedia entries. Nevertheless, with Wikipedia studies, debates persist (as they do with Facebook and Twitter in a different way) as to what kind of medium Wikipedia is and what can be inferred from content by its users.

Advantages and Disadvantages

This discussion allows us to weigh the advantages and disadvantages of big data for knowledge in the social sciences in Internet research, some of which have already been mentioned briefly. Three important ones deserve highlighting; there are no doubts others, but these, it will be argued, are critical ones for the future of this area of research. The advantages are:

1. Rapid advances in social science due to replicable and cumulative building-up of research results.
2. Easy accessibility of large amounts of readily manipulable data, often of the whole object or phenomenon under investigation, making sampling redundant.
3. Powerful knowledge due to the relation between technology and object, making behavior that relates to the object manipulable.

The main disadvantages are:

1. Proprietary nature of the data which entails limited access, so that nontransparent sources of data hinder validity checks and replicability (as will be discussed shortly, this does not apply to Wikipedia).
2. Limited number of objects from which data can be obtained and how they shed light on other media objects.
3. Public and policy concerns about how knowledge can be used for manipulation.

These advantages and disadvantages are obviously highly interrelated. There is also one feature of big data research where the advantages and disadvantages are in the balance, depending on future directions, namely, that the findings of these and other studies are currently not integrated within theories of social media (in this case) or not integrated with what is already known about the uses of information and communication technologies (ICTs) generally. This is a disadvantage as long as it hinders knowledge advances, but can be turned into an advantage if such theoretical development and integration takes place (Schroeder 2016, 2018). Let us pursue each of these points in turn:

1. Cumulative advance: The studies discussed here use research technologies to manipulate the data. That is, they use computational techniques which are quantitative (or mathematical and statistical). This reliance on research instruments which can be applied and re-used in a variety of contexts and reproduce results, build up consensus, and move on to new territory is the hallmark of “high-consensus rapid-discovery science” (Collins 1994, 1998, pp. 523–569), for example, the study of Wikipedia predicting movie success built on the study of Twitter and other attempts to predict movie success to improve upon the predictive capability. Similarly, both Facebook and Twitter are studied in relation to

how best to spread information and build on previous findings (though much of it in psychology, epidemiology, and marketing rather than information and communication studies).

2. Ready-made data access: Unlike other social science research, where data collection is a major effort, here large volumes of data are relatively easily available. Thus the studies examined here make use of big data such that they often analyze the whole of the medium (or a portion because it is more convenient, not because the representativeness of the sample is an issue), or at least the entirety of a specific language or country. This makes the research different from research on other media which typically cannot record all audience reaction or user interaction (think of telephone callers and their conversations here or television viewing behavior, each of which typically relies heavily on sampling and extrapolation). This feature makes the research about these three platforms, or important aspects of these platforms, comparatively powerful. It can also be mentioned that with this volume of data, some problems in the data arguably “wash out”: for example, users using several names or Internet accounts, or two or more people using the same name or account, or “agents” or “sock puppets” that are used to cheat the system, and the like. Furthermore, the studies discussed are often aware of such problems.
3. Powerful knowledge making behavior manipulable: on the realist and pragmatist account of science mentioned at the outset, science is “representing and intervening” (Hacking 1983) and technology can correspondingly be defined as “refining and manipulating” (Schroeder 2007). Cumulative knowledge about large volumes of readily available data belonging to the object thus produces high-powered knowledge that can be used for predicting or experimenting on – and in thus manipulating – behavior. As we have seen, the studies discussed here all aim at practical improvements or gauging or extending the influence of or within these platforms. It should be noted that “manipulating” is used here in the neutral sense of “shaping” rather than a negative one: getting people to vote, to collaborate better, or to influence each other more. This is what some of the studies discussed here are aimed at, and while this does not mean that social scientists do this “manipulating,” others, such as marketers or technology developers, can use social science knowledge to do so.

Now we can turn to three disadvantages:

1. Access: As mentioned, data from Facebook in the studies discussed here relies on having access via researchers working at the company. Twitter used to be open, but now it allows researchers only partial access for free and is otherwise restricted to fee-paying researchers (Bruns and Liang 2012). Wikipedia, on the other hand, is completely open (though there are practical issues about how data can be obtained) in keeping with the ethos of the organization: hence, limitations on access is not inherent in big data research per se. It should be mentioned that the openness of Wikipedia data also overcomes a major and widely discussed criticism of big data research: in their analysis of the Google Flu Trends research,

Lazer et al. (2014) argued that a key drawback of studies using Google (in this case, using how often people search for “flu” and cognate terms on the Google search engine to predict flu outbreaks) is that researchers do not know the algorithms of the search engine (or even when and how it changes), so that this study could be validated or built upon. Yet Generous et al. (2014) used data on how often people access Wikipedia pages about diseases to predict disease outbreaks, improving upon the Google Flu Trends study (though problems remain, which other researchers can nevertheless improve upon, including transparent datasets). This makes Wikipedia a uniquely accessible and transparent object of study. In any event, restrictions on access to data in the case of Twitter and Facebook, and lack of transparency about how the data are generated, have implications for checking validity and reproducibility, which is an essential feature of scientific knowledge.

2. Limited number of objects: There is another disadvantage which those who promote the revolutionary impact of big data on the social sciences (Giles 2012) and on society generally (Mayer-Schoenberger and Cukier 2013) overlook, which is that if big data “belongs” to the objects of research (as per the “realist” definition of data, drawing on Hacking, provided earlier), then those objects (here the focus has been on new media) are also limited. There are only as many such social media objects as people who use them (the same goes for other objects with digital social traces), and once their analysis is exhausted – say, if all possible social scientifically interesting relationships on Facebook have been analyzed – then that will entail diminishing returns in the advance of social scientific knowledge. This limitation is compounded by the separate limitation or disadvantage that has just been discussed: the proprietary nature of much of the data. Furthermore, these platforms themselves have limited reach (we can think about the fact that Twitter and Facebook are hardly used in China, and a different online encyclopedia, Baidu Baike, is far more popular than the Chinese-speaking version of Wikipedia; see Liao 2009).
3. Concern about manipulation of behavior: this disadvantage mirrors the advantage that this knowledge is powerful and so can be put to the purposes of manipulating people and predicting their behavior. And again, it is not social scientists themselves who necessarily do this, but how this scientific knowledge is used in practical settings gives rise to concerns (Schroeder 2014b). Note that this feature is not something that the three examples discussed actively seek to do; it is simply that by using the platform, users can be experimented upon, influenced, and the like. Getting people to vote, to collaborate better, or to influence each other more might be useful for election campaign managers or technology developers or marketers; but this might well be troubling to users, and perhaps also to policymakers, since some of these uses may have ethical, legal, and regulatory implications (though this vast topic is beyond the scope of this chapter).

At this point, we can turn to the feature of big data research for which its usefulness of social science advance hangs in the balance, which is the lack of theoretical grounding and integration of this cumulative and high-powered

knowledge. First, putting these studies into their proper theoretical context would mean placing them among other similar social media and among ICTs as a whole. But data from Facebook is not the same as data from social networking per se sites since, despite the dominant position of Facebook, there are other platforms that dominate in other parts of the world: for example, VKontakte in Russia and WeChat and QQ (both operated by Tencent) in China. Twitter has its counterpart in Sina Weibo. Wikipedia, as already mentioned, can be compared to the Chinese online encyclopedia Baidu Baike, which is larger and dominant in mainland China but also has a quite different set of conditions for contributors and those who use this source of information, which is heavily shaped by the state and its parent company Baidu (Liao 2009). Further, focusing on a given language, such as English, is not the same thing as studying these new social media in their entirety.

But there is a second aspect to this lack of integration: the research discussed has been carried out above all by computer scientists or physicists and published in journals or proceedings related to these, or in general science journals. To gain traction, these studies would need to enter into the knowledge base of media and communications or other social science disciplines, so as to shape broader research agendas in the social sciences. The research discussed here has to a large extent been driven by the agenda of marketing and to some extent policymaking and influencing behavior or improving collaboration: who influences whom, for example, or how can digital content be used to predict real-world behaviors? The aim of such research is often short-term and practical, which means that there may be little impetus to integrate this work into cumulative social science knowledge.

Furthermore, all the examples discussed here suffer from the problem that there is no theory which places these three ICTs into a larger context which locates their effects. The unanswered question in these studies, which is crucial to put these ICTs into the broader context of social change, is: where do these three platforms fit into the larger uses of media or ICTs generally? We know that all three platforms have become very prominent in the English-speaking world, but how do they fit, even within the English-speaking world, into our overall uses of media and ICTs? There are some studies related to these topics, but they tend to be studies of Facebook, Twitter, and Wikipedia users or contributors, and not of the population at large or their overall media uses. Yet the findings uncovered in the studies discussed here could be much more informative, and contribute more to social science advance, if they were located in this larger context. For example, it can be asked: do we want to know how Twitter and Wikipedia predict movie success, or can this knowledge contribute to a broader social science account of what makes for this success in view of the institutions of production and distribution and of movies and their economics (such as Waterman 2005)? Should we try to enhance Wikipedia contributions and contributor numbers, or do we need a broader analysis of how collaboration works (Reagle 2010) or of how consensus can be achieved, in practice, and also for contentious topics (e.g., Tatum and LaFrance's (2009) detailed study of "neoliberalism") despite so much time spent on conflict around topics? Should we focus on Facebook adoption and its uses for political mobilization and marketing, or on broader issues of ICTs and online democratic engagement (Bimber 2003; Hindman 2010) and levels of political

knowledge (Prior 2007), or even broader ones such as the role of Facebook and other social networks in everyday life (Rainie and Wellman 2012)?

A related limitation, already mentioned in passing, is that the data are “attached” to the platforms and so rather narrow: selecting retweeted URLs, reverts in Wikipedia, or links between “friends” mean analyzing data on the basis of their collectability. What is lacking is a contextualization of the “arbitrariness” or the contingent nature of how the data have been chosen: are retweeted URLs good indicators of information sharing? Why are retweets, apart from providing good data points, any more significant than the original content of messages that contain 140 characters? Or to ask a different question: how do the limitations of tweets compare with messages on Sina Weibo or WeChat, since Chinese characters have different “affordances”? Similarly in the case of “reverts” and “friends” links, what do these data points tell us, as opposed to if we began research not by relying on data points, but by thinking about the nature of collaborative editing, or for Facebook, about the nature of online relations more generally?

As this chapter has done, boyd and Crawford (2012) have pointed to the challenges of big data research, but mainly focused on epistemological skepticism about this research: the opposite of the view that has been taken here, which points to concerns precisely because knowledge in this case is so powerful because of how science advances via quantification and advancing and improving upon previous knowledge. The argument here is also different from that of Savage and Burrows (2007, 2009), who think that practical or commercial research may come to dominate social science because firms and other non-academic institutions have access to more powerful data than academic researchers. This chapter has partly agreed (though again, Wikipedia is an exception and Twitter a partial one), but Savage and Burrows are also partly misleading insofar as they suggest that the relation between “pure” research and “applied” research has recently become driven by the latter. Yet the relation between applied and basic social science with regard to the analysis of large datasets has undergone a number of profound shifts in the past. Porter (2008) has shown, for example, how public opinion polls were closely tied to advances in statistical techniques in the USA in the postwar period and often driven by applied research. While Burrows and Savage are therefore right to warn us that we may be entering a period when commercial and public-sector data analysis outpaces the capabilities of academic social scientists, this question of access is not entirely new: the relation between pure and applied research, and which side has pushed the research agenda, has waxed and waned in the past. What is new is that objects with readily manipulable data produce high-powered cumulative knowledge (which is not always constrained by restricted access, as the Wikipedia examples show), also among academic social scientists, and with it a concern that this knowledge may be useful for good or ill, depending on what it is used for. And if the harms of using this knowledge are often highlighted (Pasquale 2015), so too are the benefits (Mayer-Schoenberger and Cukier 2013; Eagle and Greene 2014). For example, studies of how information spreads or can predict behavior could also be used to improve public health campaigns or enhance knowledge about climate change, to give just two examples.

There are many other issues with these studies that have not been addressed here, for example, around the privacy of data. The Facebook study by Lewis et al. (2008), to give just one widely known example, was criticized by Zimmer (2010, see also Rule 2007 for data privacy generally). These issues will also affect how these studies and how this area of research moves forward. Here the focus has instead been on the scientific nature of these studies: the ability to “predict” or otherwise provide practical guidance for influence, or improving collaboration and information dissemination, gives these studies power – not just for practical commercial purposes but also in terms of social science setting a high bar for testing validity. Again, this is an aspect of the scientific study of behavior: not all scientific or social scientific research has practical aims, and not all the studies discussed here are limited to this. Yet what we can see in the cases of voting mobilization and movie success prediction and organizing effective collaboration is how social science aims at intervening in the world: these studies can be used to improve the design of systems or change user behavior, something which may also raise concerns.

In sum, the big data studies discussed here for digital media can be seen to make narrow, cumulative, and pragmatic advances, testing previous findings and hypotheses and improving upon them. Narrow focus on a particular object in which much data is available leads to powerful – if rather one-dimensional – advances (and again, we can remind ourselves that the data are often available for only one platform or one system among several such). But narrowness also means avoiding large questions, such as: what is the significance of these new media (the research objects) in everyday life, especially compared with other information and communication technologies? This question cannot be answered by reference to more powerful knowledge about one object alone or about one or a few dimensions of the object itself, but only by integrating them within existing theories and bodies of findings. What these high-profile, data-driven studies allow us to recognize anew is the relation between objects of study and how insights are provided by objects which provide large amounts of readily manipulable data, with all the advantages and constraints for how (social) science advances via theory, and vice versa. An object about which lots of data is available may generate powerfully scientific but narrow knowledge, but further work in contextualizing this knowledge could yield even greater advances for social science.

References

- Asur S, Huberman B (2010) Predicting the future with social media. arXiv:1003.5699; Retrieved from <http://arxiv.org/abs/1003.5699>
- Backstrom L, Boldi P, Rosa M, Ugander J, Vigna S (2012) Four degrees of separation. In: Proceedings of the 3rd annual ACM web science conference (WebSci'12). ACM, New York, pp 33–42
- Barberá P (2015) Birds of the same feather flock together. Bayesian point estimation using Twitter data. *Polit Anal* 23(1):76–91
- Benkler Y, Faris R, Roberts H, Zuckerman E (2017) Study: Breitbart-led right-wing media ecosystem altered broader media agenda. *Columbia Journalism Rev* 1(4.1):7

- Bimber B (2003) Information and American democracy: technology in the evolution of political power. Cambridge University Press, Cambridge
- Bond R, Farris C, Jones J, Kramer A, Marlow C, Settle J, Fowler J (2012) A 61-million-person experiment in social influence and political mobilization. *Nature* 489:295–298
- boyd D, Crawford K (2012) Critical questions for big data: provocations for a cultural, technological and scholarly phenomenon. *Inf Commun Soc* 15(5):662–679
- Bruns A, Liang YE (2012) Tools and methods for capturing Twitter data during natural disasters. *First Monday* 17(4). <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/3937/3193>
- Cha M, Haddadi H, Benevenuto F, Gummadi K (2010) Measuring user influence in Twitter: the million follower Fallacy. In: Proceedings of the international AAAI conference on weblogs and social media (ICWSM), May. Available at <http://twitter.mpi-sws.org/>. Last accessed 4 Dec 2012
- Collins R (1994) Why the social sciences won't become high-consensus, rapid-discovery science. *Sociol Forum* 9(2):155–177
- Collins R (1998) The sociology of philosophies: a global theory of intellectual change. Harvard University Press, Cambridge, MA
- Eagle N, Greene K (2014) Reality mining: using big data to engineer a better world. MIT Press, Cambridge, MA
- Ekbja H et al (2015) Big data, bigger dilemmas: a critical review. *J Assoc Inf Sci Technol* 66(8):1523–1545
- Ford H, Wajcman J (2017) ‘Anyone can edit’, not everyone does: Wikipedia’s infrastructure and the gender gap. *Soc Stud Sci* 47(4):511–527
- Freeman L (2004) The development of social network analysis: a study in the sociology of science. Empirical Press, Vancouver
- Generous N, Fairchild G, Deshpande A, Del Valle SY, Priedhorsky R (2014) Global disease monitoring and forecasting with Wikipedia. *PLoS Comput Biol* 10(11):e1003892
- Giles J (2012) Making the links: from E-mails to social networks, the digital traces left life in the modern world are transforming social science. *Nature* 488:448–450
- Golder S, Macy M (2014) Digital footprints: opportunities and challenges for online social research. *Annu Rev Sociol* 40:6.1–6.24
- González-Bailón S, Wang N, Rivero A, Borge-Holthoefer J, Moreno Y (2014) Assessing the bias in samples of large online networks social networks. *Soc Networks* 38:16–27
- Hacking I (1983) Representing and intervening. Cambridge University Press, Cambridge
- Hacking I (1992) The self-vindication of the laboratory sciences. In: Pickering A (ed) *Science as practice and culture*. University of Chicago Press, Chicago, pp 29–64
- Hamby P (2013) Did Twitter kill the boys on the bus? Searching for a better way to cover a campaign. Joan Shorenstein Center on the Press, Politics, and Public Policy
- Hermida A (2013) Twitter as an ambient news network. In: Weller K, Bruns A, Burgess J, Mahrt M, Puschmann C (eds) *Twitter and society*. Peter Lang, Oxford, pp 359–372
- Hill BM, Shaw A (2013) The Wikipedia gender gap revisited: characterizing survey response bias with propensity score estimation. *PLoS One* 8(6):e65782
- Hindman M (2010) The myth of digital democracy. Princeton University Press, Princeton
- Kramer AD, Guillory JE, Hancock JT (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, 201320040
- Kwak H, Lee C, Park H, Moon S (2010) What is Twitter, a social network or a news media? In: Proceedings of the 19th international World Wide Web (WWW) conference, 26–30 Apr 2010, Raleigh
- Lazer D, Kennedy R, King G, Vespignani A (2014) The parable of Google flu: traps in big data analysis. *Science* 343(6176):1203–1205
- Leskovec J, Horvitz E (2008) Planetary-scale views on a large instant-messaging network. International World Wide Web conference (WWW), Beijing
- Lewis K, Kaufman J, Gonzalez M, Wimmer A, Christakis N (2008) Tastes, ties, and time: a new social network dataset using Facebook.com. *Soc Networks* 30(4):330–342

- Liao H-T (2009) Conflict and consensus in the Chinese version of Wikipedia. *IEEE Technol Soc Mag* 28(2):49–56
- Manyika J, Chui M, Brown B, Bughin J, Dobbs R, Roxburgh C, Byers C (2011) Big data: the next frontier for innovation, competition and productivity. McKinsey Global Institute. Available at: http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation. Last accessed 29 Aug 2012
- Mayer-Schoenberger V, Cukier K (2013) Big data: a revolution that will transform how we live, work and think. John Murray, London
- Mestyán M, Yasseri T, Kertész J (2012) Early prediction of movie box office success based on Wikipedia activity big data. <http://arxiv.org/abs/1211.0970>. Last accessed 4 Dec 2012
- Meyer ET, Schroeder R (2015) Knowledge machines digital transformations of the sciences and humanities. MIT Press, Cambridge, MA
- Meyer ET, Schroeder R, Cowls J (2016) The net as a knowledge machine: how the Internet became embedded in research. *New Media Soc* 18(7):1159–1189
- O’Neil C (2016) Weapons of math destruction: how big data increases inequality and threatens democracy. Allen Lane, London
- Okoli C, Mehdi M, Mesgari M, Nielsen F, Lanamäki A (2012) The people’s encyclopedia under the gaze of the sages: a systematic review of scholarly research on Wikipedia (available at SSRN)
- Pasquale F (2015) The black box society: the secret algorithms that control money and information. Harvard University Press, Cambridge, MA
- Porter T (2008) Statistics and statistical methods. In: Porter T, Ross D (eds) *The modern social sciences*. Cambridge University Press, Cambridge, pp 238–250
- Prior M (2007) Post-broadcast democracy: how media choice increases inequality in political involvement and polarizes elections. Cambridge University Press, Cambridge
- Rainie L, Wellman B (2012) Networked: the new social operating system. MIT Press, Cambridge, MA
- Reagle JM (2010) Good faith collaboration: the culture of Wikipedia. MIT Press, Cambridge, MA
- Rule J (2007) Privacy in peril: how we are sacrificing a fundamental right in exchange for security and convenience. Oxford University Press, New York
- Savage M, Burrows R (2007) The coming crisis of empirical sociology. *Sociology* 41(5):885–899
- Savage M, Burrows R (2009) Some further reflections on the coming crisis of empirical sociology. *Sociology* 43(4):762–772
- Schroeder R (2007) Rethinking science, technology and social change. Stanford University Press, Stanford
- Schroeder R (2014a) Big data: towards a more scientific social science and humanities? In: Graham M, Dutton WH (eds) *Society and the Internet*. Oxford University Press, Oxford, pp 164–176
- Schroeder R (2014b) Big data and the brave new world of social media research. *Big Data Soc* 1(2):1–11
- Schroeder R (2016) Big data and communication research. *Oxford Research Encyclopedia of Communication*, <http://communication.oxfordre.com/>
- Schroeder R (2018) Social theory after the Internet: media, technology and globalization. UCL Press, London
- Schroeder R, Taylor L (2015) Big data and Wikipedia research: social science knowledge across disciplinary divides. *Inf Commun Soc* 18(9):1039–1056
- Segev E, Ahituv N (2010) Popular searches in Google and Yahoo!: a “digital divide” in information uses? *Inf Soc* 26(1):17–37
- Silver N (2012) The signal and the noise: the art and science of prediction. Allen Lane, London
- Tancer B (2009) Click: what millions of people are doing online and why it matters. Harper Collins, New York
- Tatum C, LaFrance M (2009) Wikipedia as a distributed knowledge laboratory: the case of neoliberalism. In: Jankowski N (ed) *e-Research: transformation in scholarly practice*. Routledge, Abingdon, pp 310–327

- van Dijck J (2013) *The culture of connectivity: a critical history of social media*. Oxford University Press, Oxford
- Waller V (2011) Not just information: who searches for what on the search engine Google? *J Am Soc Inf Sci Technol* 62(4):761–775
- Waterman D (2005) *Hollywood's road to riches*. Harvard University Press, Cambridge, MA
- Weller K, Bruns A, Burgess J, Mahrt M, Puschmann C (eds) (2013) *Twitter and society*. Peter Lang, Oxford
- West R, Weber I, Castillo C (2012) Drawing a data-driven portrait of Wikipedia editors. In: *Proceedings of the 8th international symposium on Wikis and open collaboration (WikiSym'12)*, Linz, 2012. Available at <http://www.wikisym.org/ws2012/bin/view/Main/Program>. Last accessed 4 Dec 2012
- Wilson R, Gosling S, Graham L (2012) A review of Facebook research in the social sciences. *Perspect Psychol Sci* 7(3):203–220
- Yasseri T, Sumi R, Rung A, Kornai A, Kertész J (2012) Dynamics of conflicts in Wikipedia. *PLoS One* 7(6):e38869
- Zhang X, Zhu F (2011) Group size and incentives to contribute: a natural experiment at Chinese Wikipedia. *Am Econ Rev* 101:1601–1615
- Zimmer M (2010) “But the data is already public”: on the ethics of research in Facebook. *Ethics Inf Technol* 12(4):313–325



Listen: Survivance and Decolonialism as Method in Researching Digital Activism

53

Cindy Tekobbe

Contents

Land Statement	979
Introduction	979
Survivance: A Story of Many Meanings	981
Conclusion	992
References	993

Land Statement

I offer my deepest gratitude to the indigenous peoples of North America, upon whose lands our institutions are built, and whose cultures and ways of being and knowing, our institutions continue to colonize, commodify, and erase. In particular, I acknowledge my own ancestors, the Mississippian peoples and cultures including the Chahta, upon whose land my institution, The University of Alabama, is built and sustained. Yakoke.

Introduction

In this handbook, you will find a wide range of discussions of and approaches to internet research. For my part, I will discuss cultural rhetorics, indigenous practices, and intersectional feminisms. To begin, I will briefly touch on why these approaches to internet research are necessary. Given the enormous numbers of indigenous people who have been murdered through the colonial enterprise of genocide, there are relatively few indigenous people in the world. A scholar studying indigeneity in

C. Tekobbe (✉)

Department of English, The University of Alabama, Tuscaloosa, AL, USA

e-mail: cindy.tekobbe@ua.edu

the context of Internet research is by definition then dealing with relatively small data samples. However, the small amount of indigenous activism and knowledge networks online is not the only application for indigenous methods. Unlike western models of knowledge production that center the individual, indigenous models center knowledge production in collaborative relationships. This shift in focus can be a helpful tool in understanding how digital knowledge emerges and is constructed in the digital network(s). The field of cultural rhetorics contends that knowledge production is culturally situated and produced and can provide helpful language and frameworks to think about context in online research beyond the notion of “community.” And finally, the power to arbitrate what is and is not valuable is retained by a hegemony of white, male “makers” online. This hegemony has a tendency to reconstitute and reinscribe a rather uniform identity, or a uniform standard for being and knowing, on all online discourses and contexts. Intersection feminisms, with its analysis of a multiplicity of power axes, provide tools for disrupting this monolithic identity. It is imperative that internet researchers find ways to upend the notion of the “typical user,” and these tools can help in that effort.

This chapter is an elaboration and explication of the talk I gave for the plenary panel at the annual conference of the Association of Internet Researchers (AoIR) in Tartu, Estonia, on October 21, 2017. I originally gave the talk to introduce to the AoIR audience indigenous knowledges and cultural practices in exploring both gendered online abuse and online activism against that abuse. My goal was to demonstrate how decolonial and survivance praxis could lend new perspectives and approaches to investigating the important problem of online abuse and general claims of ineffectiveness in online activism. In this chapter, I retain those goals and extend them further to describe these methodological approaches and how they work as I instantiate them. First, in this chapter, I will introduce indigenous self-identification and storytelling as a heuristic and as praxis. I will describe and discuss intersectional feminisms, cultural rhetorics, and indigenous digital practices, providing some examples. I will describe and discuss intersectional feminisms as compared to white feminism, which can reinforce the neoliberal enterprise. I will discuss how this neoliberal enterprise can subvert online activism by reinscribing power rather than rupturing it. I will discuss allyship and how survivance and decolonial practices can introduce novel ways of approaching activism. Finally, I will propose a framework for online activism that is conscious of the problems of neoliberalism, white feminism, and the overarching homogenization of identity online.

This chapter is written in first person and is an account of a collaboration with an audience. This first-person collaboration is an element of indigenous style, and there are many more contained in this chapter. A useful academic reference here is Gregory Younging’s 2018 *Elements of Indigenous Style* that identifies specific style elements for indigenous writing and provides explanations of ethical practices when working as an indigenous researcher or collaborating with one.

It is important to note the *kairotic* moment in which I gave this talk. On October 15, 2017, American actor, Alyssa Milano, posted to Twitter a suggestion that, “if you’ve been sexually harassed or assaulted write ‘me too’ as a reply to this tweet” (Milano 2017). This act kicked off a wave of women, and some men, sharing their

experiences on social media, including many actors, musicians, and political figures lending their voices to the movement. In my talk, I had originally intended to use Gamer Gate and Jezebel.com as case studies to model my practices. However, by the time I was on the plane to Estonia, the #MeToo movement had reached critical mass spreading around the world, a movement that would eventually total 19 million tweets (Pew Research Center 2018). In this critical moment, I revised my talk to include this movement that was happening online and in mass media while we were attending AoIR.

Survivance: A Story of Many Meanings

Generally, western knowledge is formed in the mind as a product of intellect, while indigenous knowledge practices are experiential, a co-constructed engagement between people (Wilson 2008). In this chapter, I include in bold italics, the original text of the talk, interwoven with the expected knowledge practices of academic writing, including research questions, theoretical groundings, methodology, and definitions. I also hope to answer the poignant question of one editor who asked:

what does it mean to insert the tongue of [my] ancestors into an academic research publication?

I originally designed the talk as an oral piece, as indigenous storytelling – to be spoken aloud with aural cues, to be heard by an audience, and to be emotionally evocative. I acknowledge the Greco-Roman origins of my field of rhetoric as well, and this talk is a blending of these two traditions. My design approaches the talk as *techne*, a performance employing rhetorical affordances of speechcraft, of evoking affect, of inviting audiences to a dialogue, and of co-creating meaning with an audience. The original text, as performed, contained repetition, gaps of silence, breaks in thoughts before completing them, and inflected words to mark dual or multiple meanings. These aural cues were included to make space for audience contemplation and reaction – to create accommodations for audiences of different cultures and practices to join the conversation (Wantanabe 2014). Through these cues and in this performance, my intent was to structure my talk as a collaboration between myself, some of the audience as members of marginalized cultural and social groups, and the larger portion of the audience as members of dominant groups and writers of dominant narratives. Here, in this chapter, I attempt to retain some of the performative components of the piece while adapting it for a reading audience. Here I emphasize my own knowledge practices while attending to western academic writing.

Survivance, as described by Vizenor, is a combination of the survival of indigenous peoples with resistance to forces of power that would erase those same peoples (1994). It is activism, enacting indigenous identity in institutional spaces and against hegemonic orientations of power. It is community in that it is the practices indigenous communities use to preserve their existence. It includes existing as an identifiably indigenous person in the presence of others not from the surviving community.

Survivance is the working toward self-determination through indigenous knowledge practices. The first knowledge practice I enacted in this talk was that of self-location (Kovach 2009).

Indigenous researchers will situate themselves as being of an Indigenous group [...]. They will share their experience with culture, and/or they will identify the Indigenous epistemology (or epistemologies) of their research. Often, they will culturally locate in all three ways. [...] For many Indigenous people, this act is intuitive, launched immediately through the protocol of introductions. It shows respect to the ancestors and allows community to locate us. Situating self implies clarifying one's perspective on the world (Meyer 2004; Hampton 1995). This is about being congruent with a knowledge system that tells us that we can only interpret the world from the place of our experience (Kovach 110).

I began my talk with a greeting in Chahta, the tongue of my ancestors, as a means of marking myself indigenous and making my community visible. It also shares something of my culture with the audience. I introduced myself and gave my name and that of my community. I addressed the audience as “beloved relations,” relations being an indigenous knowledge that all lives are connected – we are all related. I offered that my audience was beloved in an accommodation of peace, in that I was giving my talk to an audience I respected and whose collaboration I valued.

Halito!

Chim achukma?

Su hohchifo yut Cindy Tekobbe Chahta sia Tvshka Homma.

Hello, beloved relations. How are you today? I'm Cindy Tekobbe, and I come to you today as a member of the sovereign Chahta Nation of Oklahoma of the Americas.

I am an intersectional feminist theorist, an indigenous internet scholar, and a cultural rhetorician.

Here, I identified myself to the audience as a researcher, an indigenous one, and presented my heuristics – my self-located view of the world – as an intersectional feminist theorist, indigenous digital humanist, and a cultural rhetorician. These are my areas of research and the lenses through which I view the world. I identified myself culturally in all three ways Kovach articulates. I did so intuitively, as part of the procedure of introductions that almost always precedes an academic talk. My audience, while perhaps not able to identify the specific practices of survivance here, were familiar with the practice of self-introduction. Through my talk itself, I planned to engage in the brief defining and demonstrating of these practices to the audience in Tartu.

Introducing myself in the tongue of my ancestors is an example of intersectional feminist theory, indigeneity made in practice, and cultural rhetorics enacted.

For the indigenous and first peoples of the Americas, using our language that was taken from us in government-sponsored campaigns of genocide, that persist even today, is a practice of survivance. It says, we are a living people. We survive.

I survive.

And it's not just survival. It's embodied practice. Through my language and my indigenous body in front of you employing this language, I remind you that not only are we a living people, we are among you resisting the slow death of erasure and silence.

Another aspect of speaking in the language of my ancestors is both a survivance practice and a decolonial practice. The colonization of knowledges is one where the colonial researcher assumes the right to define what they observe. People are objects of study, and those people and their cultures are examined through western heuristics of reality, time, and space (Smith 2012). In indigenous knowledge practices, this Chahta language introduction positions me to my audience and describes the practice in which I am engaging – I am speaking, albeit briefly, in the language of my ancestors, the Chahta peoples. I am an emerging scholar, and giving one of the talks on the plenary panel at AoIR 2017 was arguably the most attention my scholarship had received to date. I made the choice on this important occasion to deviate from western notions of academic performance to use the language of my ancestors because it is deeply significant to me. It is deeply significant to indigenous peoples, because to speak our language in institutionalized and public places has been forbidden by the North American governments and cultures (Dunbar-Ortiz 2014) in acts and campaigns of genocide. Our traditional voices were silenced, and with them, our traditional ways of meaning-making and what it is to know. Here I am engaged in an act of survivance but also one that is decolonial because I am an indigenous woman inserting her heritage language back into the public sphere from where it had previously been erased.

I am still here. I persist.

I said I was a cultural rhetorician, and I'll take a moment to unpack that. A cultural rhetorician studies the ways that culture is employed to imbue things and rituals with meaning – the way cultural practices make knowledge – and that knowledge is situated within and meaningful to specific groups of people. It is their own knowledge and meaning.

I have just demonstrated a cultural rhetorical practice to you with my personal introduction.

My culture knows women to be leaders of families, keepers of history, ethical practitioners of justice, and conveyors of knowledge.

Through the use of my heritage tongue here, I instantiate myself as a Chahta woman, a voice of my family, here to convey to you today that which I know to be true.

That not only am I still here, but through my language, I call this space my own with the blessings of my family and the ancestors who walk with me.

I survive.

I am still here. (I persist.)

I am legitimized in this space and place that is my own because I speak it so.

This is my agency.

I pause here for definitional work. I have introduced cultural rhetorics, intersectional feminism, and Internet research into this talk. As I said, cultural rhetorics is the study of how cultures make knowledge. “All cultural practices are built, shaped, and dismantled based on the encounters people have with one another within and across particular systems of shared belief. In other words, people make things (texts, baskets, performances), people make relationships, people make culture” (Powell et al. 2014). Thus, relationships – human interactions – make reality, as through them our cultures produce the construct within which we exist. And, like indigenous scholarship centers relations, cultural rhetorics center relationships. In contrast to many western ways of knowing, in the practice of cultural rhetorics, not

only is knowledge not located in the mind of the individual, it is only created through interactions with other people. An example I offer here is that my culture knows women to be leaders of families.

While its recorded history describes the Chahta peoples as matriarchal, these women-led family structures are not abandoned to a historic record but are enacted in everyday Chahta life. My own extended family is currently organized around my mother, with myself, my sister, and my cousins all reaching out to her for advice and deferring to her experience on decisions that would impact us all. For example, I sought her counsel on whether or not to use my line's Chahta name, Tekobbe, rather than the patriarchal practice of taking the names of my father and father-in-law. My decision to attend graduate school was made at her kitchen table, and the speech at my graduation party was given by her. When we decided together whether I would continue my schooling, we discussed her concerns that more western education would distance me from my roots. Her phrasing deliberately confronted settler logics asking, would I, with my graduate work, come to think I was better than my family that my newly learned ways of being, identifying, and knowing were somehow now better than what I was raised to be. In this moment, she was recalling and invoking the dark history of indigenous boarding schools that were meant to 'kill the Indian and save the man.'

The state and church education of indigenous peoples has always been an enterprise of erasing the indigenous and replacing it with the western (Brayboy 2005). In the years since, I have accepted the responsibility to maintain my family's history and culture because I have earned it by demonstrating my commitment to retaining these knowledges as I continue to learn and practice scholarship. Chahta culture produced what I know about being a daughter, shaped my career path as an educator, and led me to accept a cultural role of keeping history, a history I share with you here. I hope it is apparent in my example that the way of being a daughter in collaboration with a mother guiding her family is different from the patriarchal structure of the unilateral authority of a father, where the bodies of daughters are a resource for their material and cultural value. I learned *daughter* from family stories, from the modeling of women in my life, and from my mother's treatment of me as an equal. I am not and never would be her chattel.

Feminist methodologies, like indigenous methodologies, also expect a researcher to locate herself and make visible her positionality when writing or speaking about her scholarship. Feminism can generally be thought of as the advocacy for equal rights for all. For intersectional feminist scholars, the term "feminism" neglects the complexity of social power and privilege. Social inequity is shaped not only by a single factor, like gender, race, or class, but along many factors interacting and influencing each other (Collins and Bilge 2016). Therefore, intersectionality is both a heuristic and a praxis, theory and practice, linking together and mutually informing one another. I return to my example of *daughter* growing up in the middle class, suburban context of the United States. I am what is known as an "urban Indian," one who has not grown up on a reservation. Instead, I grew up in a mid-sized city in the Southwest. I did not only experience *daughter* as the child of an indigenous mother but also as the child of a conservative Christian father.

Through its enormous efforts in settler colonialism, Christianity is the dominant religion in the United States. Its conservative arm is particularly influential in US culture and government. Most legislative action regarding women's bodies and women's autonomy are sourced in this deeply traditional power center. While indigenous peoples are generally collectivists, the national economy is capitalist, and its political paradigm is neoliberal. Neoliberalism privatizes the state and monetizes citizenship, like the prison industrial complex that profits off the mass incarceration of its citizens in relative precarious positions, such as people of color and the poor. My knowing of *daughter* is not simply the cultural product of my indigenous mother and culturally conservative father. As I describe here, my knowing is also intersected by the axes of collectivism, capitalism, neoliberalism, race, class, gender, and others. In other words, the self and the political cannot be understood as shaped by one force but by many, intersecting and influencing each other. Intersectionality is a useful analytic for accessing the complexities of a condition or set of conditions and for doing social justice work.

And if something about the foundation of this talk seems somewhat familiar to you, then I am glad.

Because I want to talk to you today about two online cultural rhetorical practices that share some commonalities with my own:

First, I point to the #MeToo hashtag that spilled across social media over the last week. In summary, victims of sexual harassment used #metoo to share their first-hand accounts they have endured and survived in an effort to demonstrate the near-universality of the problem. And the results were sobering as tales poured out across the internet from women and non-conforming folk who cut across racial, cultural, economic, and social groups.

Rape culture and the complexity of global patriarchy in relation to sexual violence against women is beyond the scope of this chapter; however, this chapter is written in the context that the claim of patriarchy to control women's bodies and to arbitrate what is true or valuable in relation to women's issues is near-universal. In this context, one problem with reporting sexual harassment and sexual assault is that victims' accounts are often not believed or are received with a level of skepticism that can be insurmountable. On October 5, 2017, American actor, Ashley Judd, accused movie mogul Harvey Weinstein of sexual harassment in a story broken by *The New York Times*. A week later, producer Isa Hackett made similar claims against the head of Amazon studios, Roy Price. The accusations were received publicly with skepticism, and many other actors and celebrities came to the defense of both men. There was also backlash against both women for not reporting the events sooner, for not addressing the matter in the moment, and for enticing the men into the acts (Hawbaker 2019). On October 15, 2017, American actor, Alyssa Milano, posted to Twitter a suggestion that "if you've been sexually harassed or assaulted write 'me too' as a reply to this tweet" (Milano 2017). Participants did not just post "me too," but they began sharing their narrative accounts, storytelling, of their experiences with sexual harassment and assault. #MeToo began trending almost immediately. This led, as I described in my introduction, to a global movement that eventually accounted for 19 million tweets, plus countless Facebook posts, articles, news clips,

and water cooler conversations, as well as the resignation and public apologies from prominent men in the entertainment industry and political sphere.

#MeToo has its detractors and its accusations of white feminism and neoliberal feminism. First, #MeToo did not suddenly emerge in 2017 but rather was created by activist Tarana Burke in 2006 in her work with black girls who were victims of sexual abuse in the American South. Those who were credited with the spread of #MeToo in 2017, we accused of appropriating Burke's movement. Second, with women posting their narratives of sexual harassment and assault, #MeToo was nearly inescapable, pouring into feeds across social media platforms. This led to other women and men leaving or scaling back their own social media usage to avoid the "triggering" aspects of these narratives. Third, "white feminism" is a pejorative for feminism that centers the concerns of relatively affluent white women and neglects the issues faced by poor women and women of color. This was a point of contention with the #MeToo movement because poor women and women of color may be too vulnerable to share their own stories without the fear of reprisal, a privilege only women secure in their places and spaces can claim. Thus, the movement that claimed inclusivity could not hope to represent the stories of women who might lose their incomes or face additional abuse as reprisal as they came forward. Fourth, #MeToo was also associated with a kind of neoliberal bootstrap narrative. Some women who relayed their stories, like Ashley Judd, relayed those stories as a kind of growth or development from the experience, as if a woman could resist sexual harassment and abuse if she grew older, more experienced, and wiser. The result was a series of narratives that could be read as overcoming the negative consequences of abuse through one's own efforts. These particular narratives ignored the institutional and structural inequities that enable abuses by the powerful, instead framing their abuse and assault as a self-help narrative in the vein of neoliberal individualism.

#MeToo as a campaign is not without its detractors.

Critics have called it triggering as victims chose to leave social media rather than be forced to relive their own traumas. It's been called a privileged example of white feminism. And said that it ignores institutional sources of abuse of anyone 'othered' making #MeToo just another neoliberal exercise in self-improvement and bootstrap narratives.

Additionally, as many have pointed out, #MeToo is, in many ways, just more of the status quo –

It is victims asking to be believed in a culture that discounts out-of-hand the lived experiences of women and non-binary and non-conforming folk.

So, as the argument goes, this represents the status quo because instead of assigning responsibility to the perpetrators, victims – largely women and non-conforming persons – once again, are bearing the emotional work of proving their legitimacy.

It is commonplace for institutions to forward "diversity initiatives." It is also commonplace to recruit minority members as agents of institutional diversity. This often places women and people of color in the position of "educating" their white colleagues about their own issues. It is an important work, certainly, but it is also the kind of work that is placed atop other institutional labor, relocating the burden of changing the institutional culture on the marginalized rather than placing the

responsibility on the shoulders of people who are privileged. Additionally, the emotional work of navigating confrontation or the near-universal defensiveness people feel when told they are privileged is also invisible. Again, the dominant culture reserves the right to arbitrate what is true, valuable, and credible, and people working in diversity initiatives must overcome these forces. We often term this kind of power as “resistance” to change. But it is not resistance, it is a structural procedure to retain the status quo. It is action, not reaction.

Considering all of these arguments mired #MeToo in debate about its effectiveness, its inclusivity, its motives, its value, and so on. And I agree with much of this. But I disagree that all of these problems may invalidate the movement. Intersectional feminism is a tool to describe and discuss these complexities, and certainly the movement needs intersectional feminism to represent more people if the goal is to demonstrate the scope of the problem of sexual harassment and assault. But it is also a movement of narrative, of describing lived experience, and of building on the strength of a digital network of relations. In TribalCrit (Brayboy 2005), the indigenous branch of critical race theory, stories *are* data, and #MeToo was rich with data.

But I contend here that these “you’re doing it wrong because you’re not feminist enough, intersectional enough, collectivist enough, careful enough,” is a misreading of the rhetorical practice of #MeToo. Or, it is at least an incomplete reading. Because you can also read #MeToo as a rhetoric of survivance of people whose experiences are persistently silenced and erased.

#MeToo is the practice of saying

I survive.

I persist.

I am legitimized in this place and space that is my own when I speak it so.

The second indigenous practice I want to discuss, I would like to direct at our allies.

When I was asked to give this talk, it was suggested to me that I say something provocative. If you know me, or if you just know me from online —

You know I can be provocative.

Here, provocative is given several meanings, and I paused on this word while giving my talk to emphasize that I am calling on more than one meaning here. My social media presence, like that of many people, has pictures of my cat and displays of pride in my nieces and nephews, but it also includes a great deal of activism. And given that my primary areas of research deal with the colonization of indigenous peoples and the abuses against women-identifying people and other marginalized groups, not everything I post is comfortable for all audiences. It can be provocative. I also have a snarky sense of humor that tends to skewer institutions and institutional agents. Finally, I make reference to the intellectual practice of providing a “provocation” to spark discussion. My provocation here was to direct the next section of my talk to “cishetmale allies.” By cishetmale, I mean cisgendered, those whose assigned sex at birth aligns with both their identities and their gender performance. Cisgender can be a problematic term because it may reinscribe the masculine/feminine binary in the terms of cisgender/transgender. In the same way, heterosexual reinforces the heterosexual/homosexual binary. However, in this case and context, I was being provocative, emphasizing the artificial gender and power binaries that underpin the

gender-charged online abuse I would next bring into the discussion. In this move, I am expressing mild frustration, even as I speak of respect and value. With “cishetmale,” I invoke the image here of a member of the dominant western culture, and I am signaling that I am going to call that person out.

So, this next point is a provocation. I mean it with all respect and affection for my allies, but I’m speaking largely to my cishetmale allies, not because I think you can’t be harassed and abused either in physical space or digital space.

Because of course you can and of course you are.

But as members of, and co-producers and co-constructors of, the dominant culture you are uniquely positioned to help us write a new narrative, one vastly different from the one we have now.

I think most people feel confronted when they are told they have privilege. As I have described, indigenous practice is to know and describe your own positionality. This is a reflective process and one that is community-oriented in its nature in the way that these situations and connections are articulated rather than held to one’s self. People belong to an extended network of relations, both to other people, as well as animals, bodies of water, the earth, and the elements. Indigeneity is to acknowledge not only a person’s own place in the relations network but also their accountability to other entities in the network. I set this practice in opposition to western neoliberalism that considers it virtuous to be concerned only with one’s own situation. Within the neoliberal framework, each person’s experiences are individual ones, and each person’s accomplishments are also individual. Western neoliberalism says your successes and failures are your own, measured by your viability in the capitalist market. People do not accept collective responsibility for the sick, poor, homeless, elderly, young, and the environment because these people and things are not profitable or valuable in the market.

Our impulse in this framework is to think about our own disadvantages – the things that detract from our own market viability. Academic salaries are relatively low compared to industry workers with similar levels of education. We are all subject to ageism and the western obsession with its own standards of beauty. One of my “cishetmale” allies may feel disempowered and not privileged or see themselves in the neoliberal system of bootstrapping. He worked hard for who he is and what he has and is not responsible for the condition of others. He did not harass anyone and does not want to be held accountable for the behavior of other men. It is hard to see how an individual has power and privilege when they are subject to market forces, when the neoliberal model argues that everyone begins at the same point, and people earn their own way through different levels of success. There are many points where we may not feel privileged, many burdens each of us bear. But indigeneity asks us to think of ourselves as part of a whole and know that there are people in the whole whose positions are different than ours and whose differences are valued. Decolonialism offers a point of resistance to the narratives and frames of capitalism (Powell et al. 2014). What I am discussing here is the notion of relative power. One system tells us that we are independent entities responsible for only ourselves, while the decolonial system I am referencing here *knows* that we are all connected and are accountable to each other, even for the consequences of things we did not do or cannot control.

And in your positions of relative power, I'm telling you, provocatively here, that you can't have it both ways.

At this point in my talk, the room was murmuring because here is the crux of my argument about online abuse. Too many woman-identifying and other marginalized people are targets of online abuse, yet many of them are told that this is not abuse because it is only pornography, it is only sexually explicit humor, and it is only conventional social practices. Here I resist these easy and commonplace dismissals by pointing out that if someone's narrative says harm is done, then that voice and that experience are important. Yes, porn is arguably harmless, but it becomes a threat of sexual harassment and sexual violence when it is deployed in a woman's social media feed in an effort to shame women and remind them that they are just bodies controlled by men and that they live under the threat of sexual assault. Women are more likely to be raped, and women are more likely to be touched without their permission. Women more than men face the threat of revenge porn, sexually explicit images that were once voluntarily shared in an expectation of privacy in a relationship, a privacy that is broken, when a jilted partner shares those images publicly to both shame a woman and reduce her value by sharing her body with others. And this is why we must be careful in how we imagine digital cultural practices to (not) have impact in the physical world.

You can't interpret certain digital cultural practices as only harmless when abusers and trolls know to employ those exact practices to cause harm.

Here's an example: the humble yet unsolicited dick pic, the artifacts we who do-and-even-do not date men receive in our inboxes in heaps and stacks. Of dicks.

Yes, go ahead and laugh. I'm being silly.

And I was being silly here. And I can be silly here because often nude photos are mutual flirtation and enjoyed by the intended audience. Katrin Tiidenberg's analysis of dick pics complicates the notion that they are always bad or always good and that they are always aggressive or always appreciated (Tiidenberg 2013). She points to many examples where the photographs are validating and where the receivers take great care in their role as validators. She emphasizes the trust and sense of belonging that arises from consensual sharing of these images. But her ethnographic research also reveals some cases where these pictures are harmful. From one interview, "I find that there are some guys that get off on the fact that you're about to see their cockshot without consent. Seriously. For some guys that seems to be the thing, you don't want to see it but you WILL see it because I'll put it in your inbox, I will force it on you [...]" (emphasis original) (Tiidenberg 2017). Tiidenberg reminds us that sometimes forcing a dick pic on an nonconsenting and unwilling audience is a part of rape culture.

Many of the narratives I read with the #metoo hashtag included stories of the first time the victim was sexually harassed. And for most of those people, the first time they were sexually harassed was when they were little girls, and a grown man flashed his dick at them.

Now this practice of flashing little girls gets waved away in North American culture as simple perversion, the trope of the dirty old man. But I'll contend here that this too is a

misreading. Because the flashing of little girls is part and parcel of a broader culture that engages in a race to be the first to take a woman's virginity.

I mentioned rape culture earlier, and I nodded at the power of patriarchy to set a material and cultural value on women's bodies. Here I introduce the ideas of autonomy and consent. Autonomy is the right of a person to act on their own behalf, to make their own choices, and to govern themselves. I have pointed to a number of systems of power and privilege here that interfere with the autonomy of persons. Consent is the practice of giving explicit permission. In the paradigm of rape culture, women have neither autonomy nor the right to consent. In western culture, the state always retains the power of governance over indigenous peoples and denies their right to consent. Lands are seized and civil rights restricted, and the North American governments proceed with their ongoing colonization enterprise because it is profitable to them. Like women's bodies, land is not autonomous nor is it valued simply for itself; land has value only in the context of what it is useful for and how much market value it may have. I do not want to say here that these issues are exactly alike or that they are as simple as I have written them. I note autonomy and consent here to foreground the notions that these issues are common across the colonized, whether bodies or land, and thus the potential for allyship emerges.

Who got there first? This is always the question.

And so, the flashing of dicks to little girls is rape culture. Flashers know what they're doing, and they know what cultural practice they're engaged in.

It can't be just an unsolicited dick pic if it's also a race to take virginity. If it's also sexual harassment.

It is difficult to work when you are targeted by trolls in a shaming and threatening campaign. In 2014, feminist media site [Jezebel.com](#) became the target of trolls posting pornography and rape gifs to the comments sections of their posts. Now a member of the Gizmodo Media Group, [Jezebel.com](#), at the time, belonged to the group of websites under the umbrella of Gawker Media LLC. The Gawker sites often reported stories based on tips from readers. The tips could either be sent to a site's editor directly, or they could be posted in the comments section. The comments section was set up to allow anonymous posting because, as the Gawker executives stated, they wanted to protect the free speech of their tipsters. The Gawker Media Group's overarching policy was that the comments sections in the websites in their group were to be manually moderated in the case a tipster left a tip in the comments. The anonymous nature of the comments section paired with the manual moderation by the editorial staff meant that if anonymous posters posted violent porn to the comments section, there was no platform mechanism to block it. Jezebel's all-female editorial staff was charged daily with looking through the comments section to delete any potentially offensive content. In effect, the editorial staff was exposed daily to gifs of sexual violence in the name of freedom of speech. On August 11, 2014, Jezebel's editorial staff took the extraordinary step of posting an open letter to the Internet, "We Have a Rape GIF Problem and Gawker Media Won't Do Anything About It." The letter argued that the Jezebel.com editors had repeatedly complained

to the Gawker executives about the trolling of their site and the fatigue of having to screen for violent pornography. According to the editors, Gawker executive told them that it was just pornography and there would be no additional tools for moderating the comments because freedom of speech and anonymity were corporate values. Here “trolls were empowered to post violent pornography in the interests of free speech, while the freedom to network and discuss feminist interests were threatened” (Tekobbe 2015) by those same trolls.

I’ll give you another example. The practice of responding to women’s posts with porn gifs is rather commonplace, but a really well-known instance was in the summer of 2014 when the feminist website Jezebel was literally under siege by trolls and their sock puppets posting porn to the comments threads.

The Jezebel staff reported the barrage of porn to their largely cishetmale executive editorial team and tech support who responded that it was only porn. Ignore it.

Perhaps it was only porn.

But with porn, as with most things, the context is everything.

And if it is only porn and porn is harmless, then why do trolls employ porn to shame, humiliate and harass women in their own spaces?

I do not mean here that a male flashing his penis to a little girl and males sending unsolicited and nonconsenting penis images are exactly the same as posting rape gifs to a feminist-oriented website. I do argue that they are products of the same rape culture I described earlier. When the violent sexual imagery is being used to trigger shame and feelings of threat, then they come from the same place.

So, I’m saying my cishetmale allies can’t have it both ways. When you listen to our stories, you can’t just brush them off as harmless if we say these acts are causing us harm. Because it can’t be both a harmless dick pic and sexual harassment. It can’t be harmless porn and sexual harassment. Not when it is embedded in the context of our lived-experiences.

These cultural practices of dick and porn can have specific harmful meaning to victims, a meaning that can be different than the dominant narrative.

And dear allies, we need you to hear the difference, to be aware of the cultural practices, and to understand that your narrative isn’t the only narrative, or even the most important narrative in a given context.

Here I contend that the indigenous practice of telling stories, of speaking and listening, and of co-creating knowledge from these stories is a valuable tool for breaking the gridlock of the cultural skepticism and dismissiveness that surrounds women’s issues. I contend that women-identifying persons who stand at the intersection of neoliberalism, colonialism, patriarchy, capitalism, race, class, and gender have stories that are valuable data and are critical ways of knowing in the world. Social media network people in a myriad of ways, and our stories spread across those networks, across relations. And we can speak these stories into the network because we have that role in a community. We are not silenced ones but egalitarian speakers. Our stories are knowing.

Listen to women and non-conforming folk. We’re telling you something.
We’re saying

We are surviving this
We persist.
We are legitimized in this place and space that is our own when we speak it so.
And we need you to listen.
I thank you for your attention and your time.
Yakoke.

Conclusion

This chapter is about being indigenous in a settler-colonized world. It is about being woman-identifying in a patriarchal world. It is about being marginalized by a homogenizing, hegemonic narrative of whiteness and maleness, in physical and in online spaces. It is about being a digital activist in a neoliberal technocracy. I argued here that cultural, indigenous, and intersectional frames were necessary in Internet research because they have the potential to disrupt the narrative that constructs the typical online user as “white male.” I argued that neoliberalism is both a self-replicating power system and one that appropriates every identity and experience it touches, subsuming them into the capitalist system. I argued that indigenous notions of relations as a research positionality are one possible way to disrupt neoliberal systems. And, then I demonstrated the need for indigenous, intersectional, and cultural methodologies using my two case studies.

During the question and answer portion of the plenary session where this talk was originally given, I was asked if I thought digital activism had any hope of change-making, or does it simply reproduce existing power structures. I remember responding that I did not know, but seeing the session tweets, the online joining of my conversation by attendees, was making me feel hopeful. While I do not have space for nuance here, in general, neoliberalism is a kind of neocolonialism, with wealthy corporations serving as the new imperialists. And while this neocolonialism most obviously and asymmetrically impacts the marginalized, it also impacts the other classes. For example, Colin Kaepernick, the American football player, began kneeling during the performance of the American national anthem to protest police brutality against African-Americans. Not long after, the shoe and sportswear giant, Nike, produced an ad campaign appropriating the protest to sell its goods. The “believe in something even if it means sacrificing everything” campaign raised Nike’s profits by 5% (Abad-Santos 2018). A poignant social justice protest is subsumed into the system to produce corporate profits, which leads to a question of survivance that moves beyond indigenous peoples. How will we retain essential parts of our identities and communities in the face of neoliberalism? Here I argue that indigenous peoples have stood in resistance to colonialism for more than five centuries – we survive, we persist, and this place is ours because we speak with the voices of the ancestors. And we have accomplished this resistance through the sustenance of the networks of our relations. I invite you to consider this survivance and perhaps extend these notions to your own path of resistance. Yakoke.

References

- Abad-Santos A (2018) Nike's Colin Kaepernick ad sparked a boycott – and earned \$6 billion for Nike. Vox. Accessed 6 Feb 2019 <https://www.vox.com/2018/9/24/17895704/nike-colin-kaepernick-boycott-6-billion>
- Brayboy BMJ (2005) Toward a tribal critical race theory in education. *Urban Rev* 37:5
- Collins PH, Bilge S (2016) Intersectionality. Polity Press, Cambridge
- Dunbar-Ortiz R (2014) An indigenous people's history of the United States. Beacon Press, Boston
- Hampton E (1995) Memory comes before knowledge: Research may improve if researchers remember their motives. Paper presented at the First Biannual Indigenous Scholars' Conference, University of Alberta, Edmonton, 15–18
- Hawbaker KT (2019) #MeToo: a timeline of events. Chicago Tribune. <https://www.chicagotribune.com/lifestyles/ct-me-too-timeline-20171208-htmlstory.html>. Accessed 24 Jan 2019
- Kovach M (2009) Indigenous methodologies: characteristics, conversations, and contexts, 2nd edn. University of Toronto Press, Toronto
- Meyer AM (2004) Ho'oulu our time of becoming: Hawaiian epistemology and early writings. Ai Pohaku Press, Honolulu
- Milano A (2017) If you've been sexually harassed [...]. Twitter https://twitter.com/alyssa_milano/status/919659438700670976?lang=en. Accessed 25 Jan 2019
- Pew Research Center (2018) The #MeToo hashtag has been used roughly 19 million times on Twitter in the past year, and usage often surges around news events. http://www.pewresearch.org/fact-tank/2018/10/11/how-social-media-users-have-discussed-sexual-harassment-since-metoo-went-viral/ft_18-10-11_metooanniversary_hashtag-used-19m_times/. Accessed 25 Jan 2019
- Powell M et al (2014) Our story begins here: constellating cultural rhetorics. *Enculturation*. <http://enculturation.net/our-story-begins-here>. Accessed 24 Jan 2019
- Smith LT (2012) Decolonizing research methodologies: research and indigenous peoples. Zed Books, London
- Tekobbe CK (2015) Attack of the fake geek girls: challenging gendered harassment and marginalization in online spaces. Doctorate of English, Arizona State University, Tempe
- Tiidenberg (2013) Online flashers? Arousal or offense upon receiving penis-pictures from audience in self-shooters community. *Console-ing passions*, Leicester, UK 23 June 2013
- Tiidenberg (2017) NSFW on Tumblr. Association of Internet Researchers, Tartu, Estonia 20 Oct 2017
- Vizenor G (1994) Manifest manners: narratives on postindian survivance. University of Nebraska Press, Lincoln
- Wantanabe S (2014) Critical storytelling: power through survivance and rhetorical sovereignty. *Counterpoints* 449:153–170
- Wilson S (2008) Research is ceremony: indigenous research methods. Fernwood Publishers, Black Point
- Younging G (2018) Elements of indigenous style. Brush Education, Edmonton



Identity, Difference, and Social Technology 54

Neal Thomas

Contents

Introduction	996
Who Puts the Social into the Socio-Technical?	996
Political Identity and Difference	1000
Analytical Identity and Difference	1002
Infinitesimal Identity and Difference	1005
Conclusion	1006
References	1007

Abstract

This chapter explores theories of the social as they are taken up into the designs of contemporary digital technologies. Following a brief overview of thinkers and theories of the social who have been influential upon data structures, algorithms, and human-computer interaction design, the chapter proposes a general framework for thinking about future sociality. This framework has three components, each premised on a different account of the conceptual relationship between identity and difference: sociality as political relation, as analytic or mereological relation, and as mathematical or infinitesimal relation.

Keywords

Philosophy · Social theory · Identity · Difference · Technology · Ontology

N. Thomas (✉)

Department of Communication Studies, Wilfrid Laurier University, Waterloo, ON, Canada
e-mail: neal@hivemedia.ca; ngthomas@wlu.ca

Introduction

When designating certain technologies as social, exactly what function does the concept perform? Though the means of interaction may change over time, generally we hold sociality to be about cooperating, having solidarity with, and being accountable to others in groups. To be social is also to act together using shared language, in mutual contexts or practices, often understood as association through some principle of exchange of goods, facts, messages, signals, or stories. Social technologies have been transformational on all of these fronts, bringing us into convenient and enriching contact with one another through their novel affordances. But to listen to more critical voices, there have also been some clear trade-offs, where social technologies now promote a distinctly limited, or even oxymoronic, vision of what it means to be social.

For one, there are convincing arguments that tailoring social connections algorithmically, in the name of fostering communities of common interest, has led to an unmooring of the grounds for civil disagreement (Boyd 2017). In a more psychological register, the pressure to connect over social tools now leads to profound alienation for some, and minds blunted by distraction for others (Reveley 2013). Also deeply troubling is the fact that expressing ourselves through social technologies means converting one's personal beliefs and affiliations into surveillance assets for monopoly platforms (Marx 2016). Given these facts on the ground, it can be worth bringing a renewed focus to how social technologies actually *constitute* sociality by design in the first place. This is by no means a straightforward project; the field of computer-supported cooperative work has been debating the reconciliation of group dynamics to software since its inception in the mid-1980s, for example.

On this point, Luc Boltanski describes a basic antinomy in the sociological project itself: that any change through critique must somehow reconcile the production of positivist scientific structures, through which one may reason, with ideals held out *against* such structures, so that they can be compared. Institutions are the site where this plays out, leading Boltanski to refer to them as *incorporeal beings*, or "fictions which, precisely because they are disembodied, unlike ordinary actors who are always socially situated by dint of their engagement in a body, are tasked with saying *how things stand with what is*, in principle for everyone and from an overarching standpoint: that is, with defending the very tenor of reality" (Boltanski and Chiapello 2018, p. xi). Through their different design approaches, social technologies realize these fictions, our devices and their infrastructures fostering different conceptual materializations of the tensed relationship between the corporeal and the incorporeal. By way of introduction to my own analysis of the future underpinnings of social technology on these terms, let me take a moment then to briefly outline some of the connections between social theory and design.

Who Puts the Social into the Socio-Technical?

An individual ego connecting with others on the basis of shared rights and obligations figures prominently in our understanding of social technologies. Whether one's approach is grounded in social psychology, organizational theory, or ethnographic

study, liberal pluralism has long been the backdrop against which we narrate our relationship to them. Yochai Benkler's work is perhaps demonstrative here, describing us now more than a decade ago as complex beings encountering one another in the networked information economy, as, "radically individual and self-interested at the same time that we are entwined with others who form the context out of which we take meaning, and in which we live our lives" (Benkler 2007, pp. 376–377). Equally central to a liberal-pluralist framing are the social sciences, which through founding intellects like Max Weber and Emile Durkheim have long sought to ground our understanding of complex norm-governed actions, by analyzing society as objectively real.

As already intimated, there is at the same time an important tradition of critiquing this social-scientific outlook, for the ways that it obscures or fosters pathological domination. This tradition is premised on the possibility of transcending institutions that unjustly subordinate certain groups for the sake of others. Boltanski describes this vein of critical sociology as a "dynamic aiming" of the social, its goal being to "envisage political orders based on recognition of the uncertainty inhabiting reality and the possibility of changing its contours—that is, recognition of the necessity of critique" (Boltanski and Chiapello 2018, p. xi). Through their software designs, technologists carry on both of these important traditions: as they come to rely more and more on statistical techniques from the analytical social sciences in conceptualizing their goals, they also become more critically adept at recognizing when those systems risk losing normative legitimation, in their constructions of subject and object.

Information systems experts have turned to the emancipatory possibilities of Jürgen Habermas' communicative action in the past, for example, to better understand how institutions might be made more critically responsive via the binding processes of rational argumentation (Hirschheim et al. 1995, p. 220). Others in computer-supported cooperative work have adapted John Searle's speech act theory, which updates Weber and Durkheim to emphasize the role of institutional facts and logic in relation to our collective intentionality (Flores et al. 1988). Still others follow Anthony Giddens' work, which similarly elaborates feedback cycles between social structures and human interaction, as centered in practices (Lyytinen and Ngwenyama 1992). Meanwhile, those who understand normative forms of association from a more totalizing political critique point to the destructive effects of their decontextualizing power. Feminist STS and human-computer interaction scholar Lucy Suchman takes this position in her research, for example, arguing that social science is too often placed in the service of expert knowledge, in order to manage classed and gendered populations laboring on behalf of others (Suchman 2009).

Other practitioners take a micro-sociological approach to power and institutions, focusing on the social as the reflexive conversion of symbolic resources in interlocution; the applications of G.H. Mead and Herbert Blumer's symbolic interactionism and Pierre Bourdieu's concept of symbolic violence to social technology come to mind here (Recuero 2015; Star 1996). Elsewhere are those who favor a more radically horizontal, actor-network approach, where the goal is to grasp the social more as an immanent topology of humans and nonhumans, suspended together in networks of relation (Latour 2005). With roots in Gabriel Tarde's social

monadology, such approaches have taken flight in the hands of people like John Law and in the software-adjacent realm of object-oriented philosophy, as developed by people like Levi Bryant and Ian Bogost (Bogost 2012; Bryant 2014; Law 2004).

As represented by thinkers like Maurice Merleau-Ponty and Alfred Schutz, another tributary of social theory explains the social ontologically, through accounts of phenomenological experience, hermeneutic understanding in language, and embodiment. Their ideas made their way into computing via Francisco Varela's account of embodied cognition, for example, along with Harold Garfinkel's ethnomethodology (Garfinkel and Sacks 1970; Varela et al. 1991). Importantly, they have also been subject to extensive critique and redevelopment through critical gender, race, and postcolonial studies, by people like Iris Marion Young, Judith Butler, Mariana Ortega, Stefano Harney, and Fred Moten. Computer scientists like Lilly Irani and communication scholars like A.R. Towns bring these ideas to bear on our existing approaches to data and media, to advocate for more just explanations, and an overall reconfiguration of the representational circuits between *cultural politics* and social technologies (Irani 2015; Towns 2019).

Still others insist via post-Marxist frameworks that the social is foremost defined by group conflict, in the historical-material contradiction of interests. People like Maurizio Lazzarato, Alberto Toscano, and Matteo Pasquinelli understand twenty-first-century digital societies in terms of how our shared semiotic and epistemological capacities are captured in the exchange abstraction of capitalism through social technologies (Lazzarato 2014; Pasquinelli 2016; Toscano 2012). Their ideas find material traction in software projects like Claudio Agosti's fbTREX plugin, which tracks and analyzes the impact of algorithmic personalization upon one's informational milieu, for example (Agosti 2019). Finally, at the interdisciplinary margins of the natural and social sciences, one finds more unabashedly functionalistic perspectives that formalize the social in order to operationalize it. Explaining mutuality in the context of autopoietic differentiation in emergent, system-environment interactions, works involving Niklas Luhmann's social systems theory and Sandy Pentland's approach to social physics are notable in this vein (Eriksson and Wulf 1999; Pentland 2014).

By highlighting all of these diverse perspectives, I mean to give fulsome sense to the idea that as technologists reproduce certain persistent logics of the social through their interface and infrastructural designs, they borrow from a much vaster landscape of ideas than they, or we, may realize. Constructing any social platform involves carefully fitting together the representational, visual, calculative, and computational techniques at one's disposal, with theories of the social that help to realize and intellectually justify its overarching goals. Whether implicitly by education into paradigms, like post-positivism or phenomenology, or more simply by wrestling with code to embed new ways of thinking into existing social tools, technologists are constantly engaged in a kind of translational work, between philosophy, social theory, and technical systems (Lowgren et al. 2019). Complicating matters, Internet Studies need not take practitioners at their word that some assumed or preferred isomorphism between social theory and technical practice is necessarily best suited to the problems now faced by globally connected societies.

Even more thorny is the fact that in our so-called post-Internet era, at a certain point, it can become challenging to rehearse *any kind* of critically integrative vision for the Internet, read as a totality (Heidenreich 2016). In the face of so many other disciplines wrestling with the effects of the Internet from their respective positions, Internet Studies can only respond by defining itself as deeply figural in its analyses, in the sense that Nick Couldry and Andreas Hepp deploy the term (Couldry and Hepp 2017, p. 63). As outlined by William Dutton, on this point I place myself firmly in the future-focused integrative camp he proposes (Dutton 2013). It will remain crucial for the field to acknowledge the power of its emergent specializations, but also hold fast to certain underlying philosophical commitments that have characterized it up to this point. These largely orbit the politics of knowledge and technology, as analyzed through a sociological lens. But in the face of recent new materialist philosophy and assemblage theory, we may need to expand and complicate this vision; to draw more rigorous connections between the ethical, the ethological, and the ecological, when it comes to social technologies (Braidotti 2013; Guattari 2014).

If it remains possible to point to some kind of ongoing shared project though, between those who build technology and those who study its social consequences, it would probably best be framed in terms of what Philip Agre calls a *critical technical practice*. As he writes, such practice always requires “one foot planted in the craft work of design and the other foot planted in the reflexive work of critique” (Star and Gasser 1997, p. 155). On this point it remains an important feature of Internet Studies to be generating critical responses to how systems fail us, in their many underlying conceptualizations of sociality, these days, because of how they may foment political gridlock, strife, and violence among ethnic groups or the accelerated commodification of discourse itself. At the same time, given that the vitality of Internet Studies lies precisely in how it creatively and promiscuously draws from the post-humanities, political and social science, sociology, and computer and information sciences all together (Hunsinger 2005), it remains equally important to be guided by technologists, who are in a powerful position to implement the fruits of critique back into improved, socially orchestrating systems (Hassan et al. 2018; Willcocks and Mingers 2004).

To pose a general question for future research in this register then, where should we be looking next to imaginatively rearticulate the schism that Boltanski describes – between the “real social role played by political institutions and political philosophy” and their critical unveiling as “an interplay of interests and relations of force” – as it frames the problematic of social technologies (Boltanski and Chiapello 2018, p. xxxvii)? One might see this as a tension between those who are focused more on the objectivating, empirico-rational approaches to the social – i.e., network computing’s powerful capacities for the analysis of data via number, logic, and set – and those who see our semiotic insertion into these objectivations as somehow unequal to the task of cementing a more deeply pluralistic set of subjectivations into our social tools. The goal would be for these subjectivations to come to matter to a much more politically forceful and materially persistent degree, both institutionally and epistemologically.

Put another way, if Boltanski's antimony of the social represents a kind of permanent membrane between subjective accounts of the social and objective ones, then how will we next push through it, to speak more frankly about the political stakes of the *initialization* of sociality *through* technics, according to their designed subject-object relations? As a small step in this direction, my strategy in the remaining space of the chapter will be to lay out a set of overlapping but ultimately distinct accounts of *identity and difference*, which seem to be at work in all social technologies. Each account that I will describe carries with it a different power for *determining why things belong together or apart*, achieved through appeals to some philosophical system, or set of systems that, taken together, stages or produces computable social relation. Picking them apart, I argue, puts us in a better position to rearrange them in an improved way. One benefit of separating them out for example is that we can begin to see how critical voices invested in a more democratic control over social technologies may in a sense be speaking past one another, or at least in very different registers than they may realize.

Here are the three forms of relation I have in mind:

- **Political** relation, which I understand to be based in both an *ethical*, and an *agonistic* formulation of identity and difference, conceptualized as between beings undergoing the (mis-)recognition of Self and Other.
 - **Analytical** relation, which I understand as a *logical* and *mereological* formulation of identity and difference, conceptualized as between people engaged in the shared classificatory and inferential judgment of things into sets, variously called “data-objects,” “entities,” or “content.”
 - **Infinitesimal** relation, the most abstract of the three, which I understand as a *processual* formulation of identity and difference. Via thinkers like Alfred North Whitehead and Gottfried Leibniz, it is conceptualized in terms of what we might call “matter-flows,” where all of reality is made rational, set into continuous distributions of intensities, and brought to life through the statistical techniques of differential calculus.
-

Political Identity and Difference

Based in recognition, political relation as it occurs over social technologies is perhaps easiest to grasp, because it has been front and center in our collective consciousness for several years now. Recent examples include the organizational success of political campaigns with significant social media components, like #metoo or #blacklivesmatter, but also the troubling ascendance of white supremacy groups into the mainstream, hyper-partisanship in electoral politics, as citizens seem increasingly unable to find common ground, and broader issues around the personalization affordances of social technologies, as we all try to stay informed on the basis of shared facts (Marwick 2017). Taken together, these issues provoke an acutely felt need to exact more substantial public control over social technologies like Google and Facebook, which now seem far too open to exploitation by state

actors seeking to manipulate populations for anti-democratic purposes (Rosenberg et al. 2019).

Such problems have of course led academics and journalists to conceptualize and criticize social technologies in equally frank, political terms. On top of investigating how platforms may polarize opinion, reward shallow thinking, or incentivize outrage, there are important political-economic perspectives that build on the argument from commodification, speaking to the impact that oligopolistic conditions of ownership are having on the utility and potentials of social technologies (Mejias 2013). We can add to this approaches that frame the political through the overdetermined nature of subjectivity and the self, where intersectionality theorists argue, for example, that social technologies explicitly or unwittingly misrepresent differently abled, raced, gendered, and sexed bodies in their designs, leading to both social and economic marginalization (Eubanks 2018; Noble and Tynes 2016; Noble 2018). As suggested above, all of these perspectives feedback over time into critical technical practice, influencing those seeking to respond to social problems with improved or alternative designs.

To generalize from out of the ferment, social technologies matter politically because they organize a powerful relationship between Self and Other, read as a set of potentials and pitfalls for a *self-sovereign subject*. Here, identity is naturally sited in the individual person, with the social understood in a liberal-pluralist, existential way, as being about achieving autonomy for “whoever” to exist in, and in agonial relation to, different groupings and collectivities. We might summarize this form of relation by way of Jeremy Gilbert, who understands the political conditions of sociality to always be based in what he calls a “Leviathan logic” – some principle of association ultimately rooted in an abstract, regulatory persona, or meta-individual. Reviving Thomas Hobbes’ Leviathan, Gilbert writes that “Every social formation, or at least every political order, depends upon the relationship of each constituent individual to a central figure, term, or idea that defines the coherence of the group (as well as on the designation of ‘constitutive outsides’)”. Gesturing to Chantal Mouffe’s work on agonistics, he continues that “What differentiates democracy from other types of social formation or political order is the fact that it institutionalizes the idea of this central locus of sovereignty as being inherently empty, open or contested”(Gilbert 2014, p. 58; Mouffe 2009).

Is there an operant Leviathan logic for social technologies? More than one? Is it a democratically contested one? One response is to say that the regulating meta-individual behind the production of a self-sovereign subject is first and foremost a *communicating figure*, where political power lies in the discursive maintenance and amplification of the social groupings to which one belongs. To next link this interpretation of identity and difference as political relation, up to one involving logical and mereological relation, we must first understand how disciplines like computer science, the library and information sciences, and human-computer interaction think about users as communicative. In his work on the philosophy of communication, Briankle Chang writes that modern communication theories tend to be framed in a cognitive mode, as being about transcending private individuality. Chang writes that communication theories frame their exposition in terms of

questions, like “How do people resolve their differences, transcend their private thoughts, and render their subjective experiences shareable with others? . . . How is “shared meaning” or “understanding” achieved?”(Chang 1996, p. 39). Because we are solitary agents of meaning, the story goes, we must rely on the event of communication to transcend our isolation.

There is however a fundamental issue with this formulation; because they set up the conditions of intersubjectivity as the transcendence of individual private minds, communication theories wind up foreclosing any understanding of what intersubjectivity could actually *consist in*. More simply, when we pose the problem of communication as, in advance, involving communicating agents (through terms like you and I) then for Chang, the process of transcending our differences comes to naturally be defined and delimited in the terms of a generalized exchange, or as the sending and receiving of messages. The actual, underlying terms upon which this occurs therefore becomes a crucial moment for translating one’s singularity – “the person named ‘x’” – into the formalizing strategies of social technologies, “whoever user,” because these are what will ultimately render us as subjects to one another in the Self/Other relation.

Chang calls it the problem of the postal principle, writing that it “effects the reduction of the different into the same, the domestication of the alien into the customary, and, as urban planners say, the gentrification of the unfit into the acceptable” (Chang 1996, p. 47). In other words, in attempting to explain intersubjectivity, political or otherwise, on communicative terms, we often wind up explaining it away. In response, he insists we appreciate the postal principle not on face value, as a teleological description of a movement between the I and the We, but rather as a strategic, structural principle of metaphorization. Linked together with Gilbert’s premise of Leviathan logics structuring political relation, the idea here is that the underlying epistemologies of the act of classification *themselves* have political contours and consequences, in determining the ways that designers and programmers pragmatically justify the intentions behind system designs, using philosophy and social theory.

Recalling the commitments of Agre’s critical technical practice, we need not content ourselves to speak of political relation exclusively at the level of the Self/Other relation in communication; rather, Chang’s perspective demands that we push further into the underlying “postal principles” at work in social technology design, to examine practices at the level of their material-semiotic and representational dynamics, including logic and statistical practice, as these might be wrapped up with political subjectivation. After all, it is the underlying, materially coded data structures that connect the measurable exchange of sent and received messages as data *up to* sociopolitical relation at the level of communication.

Analytical Identity and Difference

For the sake of space, I will mention just two metaphorical strategies, or ways of staging a postal principle, in operation at the level of data technique: knowledge graphs and social graphs (Thomas 2018). Each style of graph functions according to

the formal commitments of a subfield in computer science known as mereotopology, which combines “mereology (the study of parts in relation to wholes) with topological aspects of the description of space” (Stell 2017). Knowledge and social graphs are having an increasingly broad impact on our relationship to social technologies, because of their fluidly generic capacities for automating social reasoning among human beings and machines, on the basis of either the epistemic declaration, or the performative realization, of part/whole relations. Graphs align non-Euclidean geometry to the form of the proposition in logic, producing what are called formal ontologies. These ontologies serve to foster vastly more efficient communication between groups, individuals, and machines, especially as an underlying substrate for machine learning algorithms (Iliadis 2019).

As concerns postal principles, knowledge graphs set one up according to the semiotics of empirical resemblance and inference, as developed by the American pragmatist philosopher Charles Sanders Peirce, in concert with ideas about spatial and temporal reasoning from Alfred North Whitehead. Peirce saw his existential graphs (the conceptual forerunner to today’s knowledge graphs) as an attempt to “square the circle” between reason and experience through shared deliberation. Their utility lays in producing a kind of immanent social rationality, in which, as Kamini Vellodi writes, “the ‘universal validity’ of the conclusions” that Peirce’s network-like diagrams produced was “...predicated on the common structures of thought uniting the interpreting subjects.” Of the existential graph, she continues that “the effectiveness of the rules it constructs is premised on the fact that these rules bind ‘all minds alike’” (Vellodi 2014, p. 83). The result was for communicative power to be defined on the terms of analytic reference, through the unfolding of a rich pragmatics of inductive, deductive, and abductive inference.

With the ongoing transformation of large portions of the Internet and web to act in support of artificial intelligence, knowledge graphs have fast become a coordinating medium for everyday social life. Users are coming to inhabit a kind of Peircean Leviathan logic, a principle of association that effectively organizes us as members of quasi-scientific communities, who are constantly seeking to accumulate, connect, and use empirical facts about reality. Asking Siri for the nearest gas station, for instance, returns an accurate answer in part thanks to Peirce’s system for the production of rational signs. This is but one example of how we are now deeply incentivized to communicate identity and difference mereologically, on the terms of qualitative spatiotemporal reasoning. Though styled on more performative grounds, befriending someone on a social network also happens on this matter-of-fact basis. Free social platforms derive economic value from us as an audience commodity, insofar as they are able to make ever-more fine-grained abductive inferences about our relationships to one another, based on the public, but effectively part-whole registration of our beliefs, actions, and desires – a phenomenon that Taina Bucher dubs computable friendships (Bucher 2018, p. 8).

Social graphs follow knowledge graphs in their propositional structures but use representational language that is more based in our active association with others, sometimes through a reliance on speech act theory, other times simply taking on faith the cognitive-intersubjective telos of communication critiqued by Chang. Under the influence of organizational theory, speech act philosophy, and strategies from analytic

sociology, the postal principle for social graphs amounts to conducting people together through *illocutionary force*, or on the basis of how we perform our intentions alongside what we say. An early and important place this approach was developed at the level of data technique was in the work of Terry Winograd and Fernando Flores, who through the 1980s and 1990s proposed to expand traditional epistemic approaches to data to include representational features that were based in the phenomenological performance of social accountability (Winograd and Flores 1987).

Over and above their idealized propositional content as factual assertions (the basis for Peirce's knowledge graphs), John Searle famously argued in his philosophy of speech acts that sentences also *effect situations* and *do things* in a social context (Searle 1970). Classic examples include "I now pronounce you man and wife" or "I name this ship the *Queen Elizabeth*," the idea being that institutional facts are generated through the embodied performances of institutionally delegated roles. Searle went on to develop a systematic typology of these performative inflections of language, which, alongside Heideggerean phenomenology, Winograd and Flores later came to rely upon to effect a postal principle for early groupware systems (Flores et al. 1988). The original context of their software system was intersubjective accountability among employees in an office setting; but it's not hard to see how their ideas have since been tectonically influential upon today's social technologies. Social graph-based platforms like Facebook and Twitter afford the expression of *calculable* speech acts, as when we publicly declare friendships, kinship, or interest ties by following someone, use emotional expressives such as likes, stars, and "thumbs up," or make intersubjective requests to act, such as inscribed promises to attend an event.

Having begun with the Self/Other relation and coming to understand its political effectiveness as turning heavily on our subjectivity as communicative, we arrive at a material basis for that communication: a Leviathan logic of mereological relation. Communication is at base calculative and logical, and our affective energies matter to the degree that they feed algorithmic systems through the various, *computable* styles of social exchange, presented to us via the affordances of social technologies. At this point we also reach a somewhat ambiguous fork in the road, as concerns *future* sociality, and its relationship to digital technics. How might these two forms of identity and difference – political and mereological – be reconciled by different means? Down one path seems to lay continued commitment to the sort of philosophical anthropology I have been laying out, in which the existentially based, Self/Other political relation remains yoked to the classificatory relation. We can even go so far as to say that a kind of concretization of social technologies has already occurred. As both groups and individuals and states and industries increasingly rely upon them to orchestrate societies, we seem to have settled into a commonsensical overlapping of the self-affirming, subject-object relays between information retrieval, political communication, and the predictive analytics of commercial social technologies.

In a sentence, this amounts to the continuation of a Leviathan logic that fuses liberal individualism to the formal semiotics of data, so as to analyze and steer the social order through its novel patternings, in perpetuity. Luciano Floridi cautiously embraces this arrangement as a Fourth Revolution of the Infosphere, for example; but is there an alternative (Floridi 2014)? To speculate in conclusion, going down another

path would commit us to a more thoroughly posthuman approach, in which we acknowledge the limits of this kind of philosophical anthropology, as propping up the communicating user in insufficiently critical ways. Forging a different relationship of critical technical practice, in the name of a different relationship to one another, would seem to involve radically *demoting* the substantializing features of the user-as-liberal-subject, in favor of redefining identity and difference much more directly upon our field-like relationship to nature. The goal here would be to provoke a more ecological relationship to sociality, more directly based in what Didier Debaise calls “infinitesimal agencies” inside of an “infinite movement” (Debaise 2012).

Infinitesimal Identity and Difference

The last form of relation gives a still more formalized and still more fundamental account of identity and difference, this time based in the philosophical roots of the differential calculus. The infinitesimal relation matters right now, because it is the basis upon which social technologies like Google and Facebook are transforming their epistemic and performative graphs that I have just described, into predictive machine learning systems. The infinitesimal form of relation supercharges the mereological approach, because instead of characterizing the world in terms of contingent, private truths that need to be communicated through recognitional and/or analytical forms of relation, it entirely brackets or dissolves human subjectivity, to see everything in the universe, indeed reality itself, as already participating in continuous, rational flows.

We have Gottfried Leibniz’s principle of sufficient reason to thank for its formulation, which renders identity and difference in the more field-like terms of what Daniela Voss calls “the infinite self-movement of a universal ground” (Voss 2013, p. 42). Popular understanding of the infinitesimal relation often comes through in the notion of so-called possible worlds. As we are aware of our situation in experience, the theory goes, we are also aware that our situation connects up to other situations, across many different scales of reality, running the gamut from our current location in a meeting room to the Earth’s position in the galaxy. For each distinct, contingent way that the world could have been otherwise across these situations, Leibniz argues that rationally, there must be an infinity of possible worlds. Much of the justification for his approach comes from Leibniz’s struggles over the development of calculus, more specifically his understanding of differentials, which involve numbers that are smaller in value than any positive real number.

Leibniz called them “differences which are on the point of vanishing,” and their original benefit was to represent curves mathematically as an infinite system of infinitely small, straight lines (Leibniz 2012, p. 543). The ubiquitous application of calculus to modern life has meant that, on the basic material ground of social technologies, we understand entities and people as having identity and difference according to such concepts as instantaneous rate of change and the magnitude of vectors. What this means for our purposes is that the other logics of identity and difference I have laid out – recognitional encounter between Self and Other in the

maintenance of social groupings and the securing of precise identity through bivalent classification and/or illocutionary performance – are subsumed under this infinitesimal form, rendering them in the purely differential terms of varying quantities. As expressed in the neuronal modelings of machine learning algorithms, identity becomes a continuous, relational intensity of minute differences, or more simply, a contingent snapshot of ongoing *processes* of differentiation, which never really terminate in stable *reference to* subjects and objects.

We can circle back to include political relation in this new arrangement by way of a few different authors. In Cathy O’Neil’s work on algorithms, for example, she writes that the predictive models constructed through the three interconnected formulations of identity and difference are “increasingly the tools we will be relying on to run our institutions, deploy our resources, and manage our lives.” Implicitly rejecting Leibniz’s view of infinite reason, she argues that we simply cannot continue to see mathematical models as “neutral and inevitable forces, like the weather or the tides” (O’Neil 2016, p. 218). And in his book, *The Politics of Logic*, Paul Livingston writes that when it comes to the tiered formalisms of identity and difference laid out, we must simultaneously consider not just “the ways that collective life can be theoretically reflected in formal-symbolic structures, and the extent to which such structures can illuminate the lived forms of community and social/political association” but also “. . . the effects of the material and technological realization of some of these very same formal structures on the actual organization of contemporary politics” (Livingston 2012, p. 4).

Closer to the interdisciplinary work going on in Internet Studies, Mark Hansen takes a similar position when writing of our peculiar circumstances: that we “find ourselves faced with the imperative to respond—to take deliberate action and to make conscious decisions—in situations where deliberation is no longer the relevant mode of response and where consciousness is no longer the relevant level of experience” (Hansen 2015, p. 59). More broadly, Hansen advocates for a critical return to A.N. Whitehead’s understanding of Leibniz’s notion of the infinitesimal, arguing that the ubiquity of social technologies as a substrate for everyday life now demands that we reconsider our relationship to reality as depersonalized, more field-like, and environmental. He argues that we must depose the traditional logics of subjectivity in the process – Leviathan logics, as I have been describing them via Gilbert – writing that:

Whitehead’s ontology allows us to conceptualize twenty-first century media’s impact—their power to modulate the continuum—in terms of potentiality: if media shape the potentiality for the world to impact future experience, they do so *from the outside*—from the radically environmental perspective of the total situation of the settled world that, as we have seen, precedes the genesis of any agent-centered subjective perspective. (Hansen 2015, p. 230)

Conclusion

Each of these writers is, in their own way, suggesting in other words that we must seek out new ways of *re-grounding* our calculative practices, beyond the considerations of individual judging subjects. It’s worth noting that with a few exceptions,

such as the Whiteheadian sociology of Gabriel Tarde, this represents quite a radical departure from the legacy of social theory that began this chapter (Tarde 2011). If we follow this path, how will Internet Studies metamorphose in its encounter with the infinitesimal? Perhaps the best way to characterize what may occur is to suggest a phase shift on the horizon, in our conceptualization of the *organismic* relationship between beings, knowledge, machines, and their milieu. Technologists have been admirably focused on building systems that amplify the individual capacities of citizens in knowledge societies, in so many ways. And yet in an important sense, we still find ourselves at the beginning.

We have really only begun to grapple with networked knowledge as an overall field of relations, that is, as ultimately reproducing our everyday collective reality, across so many different registers of significance, by promiscuously shifting between nature and culture. Along the way, we have come to better appreciate that technical ensembles do not merely supplement our relationships to environments and one another; rather, they often constitute their very conditions of possibility (Simondon et al. 2017, p. 80). In the face of climate change, the rise of authoritarian governments, and an economy whose continued growth seems predicated on the intensifying procedural extraction and feedback of meaning as a commodity, it remains an open and important question as to whether we can reinvest our critiques of extant social technologies into new designs. These should be designed to force us into new kinds of openness toward other beings in more radical ways, also forcing us to think in concert through shared, or transindividual ecological fields, and not simply as private minds engaged in communicative social exchange.

References

- Agosti C (2019) facebooktracking.exposed. Retrieved March 12, 2019, from <https://facebooktracking.exposed>
- Benkler Y (2007) The wealth of networks: how social production transforms markets and freedom (9/23/07 edition). Yale University Press, New Haven/London
- Bogost I (2012) Alien phenomenology, or, what it's like to be a thing. University of Minnesota Press
- Boltanski L, Chiapello E (2018) The new spirit of capitalism (trans: Elliott G). Verso, London. (Reprint edition)
- Boyd D (2017) Hacking the attention economy. Retrieved March 12, 2019, from <https://points.datasociety.net/hacking-the-attention-economy-9fa1daca7a37>
- Braidotti R (2013) The posthuman. Polity Press, Cambridge/Malden
- Bryant LR (2014) Onto-cartography. Edinburgh University Press, Edinburgh
- Bucher T (2018) If . . Then: algorithmic power and politics. Oxford University Press, New York
- Chang BG (1996) Deconstructing communication: representation, subject, and economies of exchange. University of Minnesota Press, Minneapolis
- Couldry N, Hepp A (2017) The mediated construction of reality. Polity Press, Cambridge/Malden
- de Tarde G (2011) Monadology and sociology. Re.Press, Melbourne
- Debaise D (2012) The subjects of nature: a speculative interpretation of the subject. Warwick J Philos. Special Volume 23(5):45–60
- Dutton WH (2013) Internet studies: the foundations of a transformative field. The oxford handbook of internet studies. <https://doi.org/10.1093/oxfordhb/9780199589074.013.0001>

- Eriksson DM, Wulf V (1999) Self-organizing social systems: a challenge to computer supported cooperative work [Text]. Retrieved March 12, 2019, from <https://www.ingentaconnect.com/content/imp/chk/1999/00000006/00000002/86?crawler=true>
- Eubanks V (2018) Automating inequality: how high-tech tools profile, police, and punish the poor. St. Martin's Press, New York
- Flores F, Graves M, Hartfield B, Winograd T (1988) Computer systems and the design of organizational interaction. ACM Trans Inf Syst 6(2):153–172. <https://doi.org/10.1145/45941.45943>
- Floridi L (2014) The 4th revolution: how the infosphere is reshaping human reality, 1st edn. Oxford University Press, New York/Oxford
- Garfinkel H, Sacks H (1970) On formal structures of practical action. In: McKinney JC, Tiryakian EA (eds) Theoretical sociology: perspectives and developments, 1st edn. Appleton-Century-Crofts, Educational Division, New York
- Gilbert J (2014) Common ground: democracy and collectivity in an age of individualism. Pluto Press, London
- Guattari F (2014) The three ecologies. (I. Pindar & P. Sutton, Trans.). London/New York: Bloomsbury Academic
- Hansen MBN (2015) Feed-forward: on the future of twenty-first-century media. University Of Chicago Press, Chicago/London
- Hassan NR, Mingers J, Stahl B (2018) Philosophy and information systems: where are we and where should we go? Eur J Inf Syst 27(3):263–277. <https://doi.org/10.1080/0960085X.2018.1470776>
- Heidenreich S (2016) Freeportism as style and ideology: post-internet and speculative realism, Part I-Journal #71 March 2016- e-flux. E-Flux, (71). Retrieved from <https://www.e-flux.com/journal/71/60521/freeportism-as-style-and-ideology-post-internet-and-speculative-realism-part-i/>
- Hirschheim R, Klein HK, Lyttinen K (1995) Information systems development and data modeling: conceptual and philosophical foundations. Cambridge University Press, Cambridge
- Hunsinger J (2005) Toward a transdisciplinary internet research. Inf Soc 21(4):277–279. <https://doi.org/10.1080/01972240500189216>
- Iliadis A (2019) The tower of babel problem: making data make sense with basic formal Ontology (SSRN Scholarly Paper No. ID 3326315). Social Science Research Network, Rochester. Retrieved from <https://papers.ssrn.com/abstract=3326315>
- Irani L (2015) The cultural work of microwork. 17(5):720–739. <https://doi.org/10.1177/1461444813511926>
- Latour B (2005) Reassembling the social: an introduction to actor-network-theory. Oxford University Press, Oxford/New York
- Law J (2004) After method: mess in social science research. Psychology Press, London
- Lazzarato M (2014) Signs and machines: capitalism and the production of subjectivity. Semiotext(e), Los Angeles
- Leibniz GW (2012) Philosophical papers and letters: a selection. Springer Science & Business Media, Dordrecht, Netherlands
- Livingston P (2012) The politics of logic: badiou, wittgenstein, and the consequences of formalism. Routledge, New York
- Lowgren J, Carroll JM, Hassenzahl M, Erickson T, Blackwell A (2019) The encyclopedia of human-computer interaction, 2nd edn. Retrieved from <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed>
- Lytytinen KJ, Ngwenyama OK (1992) What does computer support for cooperative work mean? A structurational analysis of computer supported cooperative work. Account Manag Inform Technol 2(1):19–37. [https://doi.org/10.1016/0959-8022\(92\)90007-F](https://doi.org/10.1016/0959-8022(92)90007-F)
- Marwick A (2017) Are there limits to online free speech? Retrieved March 12, 2019 from <https://points.datasociety.net/are-there-limits-to-online-free-speech-14dbb7069aec>
- Marx GT (2016) Windows into the soul: surveillance and society in an age of high technology. University of Chicago Press, Chicago
- Mejias U (2013) Off the network: disrupting the digital world. University of Minnesota Press, Minneapolis

- Mouffe C (2009) *The democratic paradox*. Verso, London
- Noble SU (2018) *Algorithms of oppression: how search engines reinforce racism*. NYU Press, New York
- Noble S, Tynes BM (2016) *The intersectional internet: race, sex, class, and culture online*. Peter Lang Publishing, Inc, New York
- O'Neil C (2016) *Weapons of math destruction: how big data increases inequality and threatens democracy*, 1st edn. Crown, New York
- Pasquinelli M (2016) Abnormal encephalization in the age of machine learning-Journal #75 September 2016- e-flux. E-Flux, (75). Retrieved from <https://www.e-flux.com/journal/75/67133/abnormal-encephalization-in-the-age-of-machine-learning/>
- Pentland A (2014) *Social physics: how good ideas spread-the lessons from a new science*. The Penguin Press, New York
- Recuero R (2015) Social media and symbolic violence. *Social Media + Society* 1(1):2056305115580332. <https://doi.org/10.1177/2056305115580332>
- Reveley J (2013) Understanding social media use as alienation: a review and critique. *E-Learning Digit Media* 10(1):83–94. <https://doi.org/10.2304/elea.2013.10.1.83>
- Rosenberg M, Confessore N, Cadwalladr C (2019) How trump consultants exploited the facebook data of millions. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html>
- Searle JR (1970) *Speech acts: an essay in the philosophy of language*. Cambridge University Press, Cambridge. (Reprint edition)
- Simondon G, Malaspina C, Rogove J (2017) On the mode of existence of technical objects. Univocal Publishing, Minneapolis. (First edition [in English])
- Star SL (1996) Working together: symbolic interactionism, activity theory, and information systems. In: *Cognition and communication at work*. Cambridge University Press, New York, pp 296–318. <https://doi.org/10.1017/CBO9781139174077.013>
- Star SL, Gasser L (1997) In: Bowker G (ed) *Social science, technical systems, and cooperative work*. Routledge, Mahwah
- Stell JG (2017) Mereotopology and computational representations of the body: computational culture. *Comput Cult* (6). Retrieved from <http://computationalculture.net/mereotopology-and-computational-representations-of-the-body/>
- Suchman L (2009) Agencies in technology design: feminist reconfigurations. In *Digital Cultures: Participation – Empowerment – Diversity*. Bremen: University of Bremen. http://www.informatik.uni-bremen.de/sotec/gict2009/proceedings/GICT2009_Suchman.pdf
- Thomas N (2018) *Becoming-social in a networked age*. Routledge, New York
- Toscano A (2012) Seeing it whole: staging totality in social theory and art. *Sociol Rev* 60 (1_suppl):64–83. <https://doi.org/10.1111/j.1467-954X.2012.02117.x>
- Towns AR (2019) Black “Matter” lives. *Women’s Stud Commun* 41(4):1–11
- Varela F, Rosch E, Thompson E (1991) *The embodied mind: cognitive science and human experience*. MIT Press, Cambridge
- Vellodi K (2014) Diagrammatic thought: two forms of constructivism In C.S. Peirce and Gilles Deleuze. *Parrhesia J Crit Philos* 19:79–95
- Voss D (2013) *Conditions of thought: deleuze and transcendental ideas*. Edinburgh University Press, Edinburgh
- Willcocks LP, Mingers J (2004) *Social theory and philosophy for information systems*. Chichester, Wiley. Retrieved from <http://eu.wiley.com/>
- Winograd T, Flores F (1987) *Understanding computers and cognition: a new foundation for design*. Addison-Wesley, Reading



Constitutive Surveillance and Social Media 55

Ryan Tippet

Contents

Introduction	1012
Constitutive Surveillance	1014
Economic Surveillance	1018
Political Surveillance	1021
Lateral Surveillance	1024
Oppositional Surveillance	1026
Conclusion	1028
References	1029

Abstract

The surveillance studies field considers its subject to be centrally important to our contemporary, technologized societies. The editors of the *Routledge Handbook of Surveillance Studies* write that surveillance “has always been a component of institutional routines and human sociality, but over perhaps the past 40 years it has emerged as the dominant organising practice of late modernity” (Lyon et al. 2012, p. 1). This chapter will apply the view of surveillance as “dominant organizing practice” to social media, configuring this surveillance generally as an apparatus of Foucauldian power. Ultimately, the chapter advances a ‘constitutive’ surveillance framework as an avenue for critique, enumerating four ‘forms’ of surveillance—economic, political, lateral, and oppositional—which coalesce and conflict in the constitution of Facebook.

Keywords

Surveillance · Social media · Foucault · Deleuze · Facebook · Constitutive

R. Tippet (✉)

Department of Media, Film and Communication, University of Otago, Dunedin, New Zealand
e-mail: ryan.tippet@otago.ac.nz

Introduction

The surveillance studies field considers its subject to be centrally important to our contemporary, technologized societies. The editors of the *Routledge Handbook of Surveillance Studies* write that surveillance “has always been a component of institutional routines and human sociality, but over perhaps the past 40 years it has emerged as the dominant organising practice of late modernity” (Lyon et al. 2012, p. 1). This chapter will apply the view of surveillance as “dominant organizing practice” to social media, configuring this surveillance generally as an apparatus of Foucauldian power. It will also outline how surveillance in four forms is so fundamentally crucial to social media as to be its defining “constitutive” logic. Ultimately, the chapter advances a constitutive surveillance framework as an avenue for critique, particularly of new internet technologies and platforms.

This perspective seeks to emphasize that the relationship between social media technologies and surveillance is not merely one of co-option, appropriation, or incorporation – where opportunities for surveillance are taken up in the course of social media development – but instead a constitutive relationship where the logics and functions of surveillance determine each new iteration and feature of a platform. In short, surveillance from this point of view is always fundamental, and never incidental, to social media. This approach is immediately critical of what unstated ambitions or data collections are going on out of sight, and it immediately dispels the rhetoric of community and security with which social media companies extol their services and spy agencies justify theirs. As a schematic overview of the constitutive surveillance approach, this chapter will focus on Facebook, the exemplary social media platform with 1.94 billion monthly active users (as of 31 March 2017; this figure is taken from Facebook’s First Quarter 2017 Results (2017a), and represents a 17% increase year-over-year). Virtually every development and change affecting Facebook – to its platform, its mobile apps, and its terms of service; in its legal battles, its acquisitions, its research and development, and its philanthropy – can be situated in relation to surveillance, because surveillance logics determine how Facebook functions at every level.

For example, as I have argued elsewhere (Tippet 2016), a surveillance critique of “Internet.org” cuts through Facebook’s altruistic rhetoric and paints an image instead of a uniquely surveillant corporate imperialism. According to Facebook – who heads up the joint initiative with tech industry leaders – Internet.org has “the goal of bringing internet access and the benefits of connectivity to the portion of the world that doesn’t have them” (Internet.org n.d.). The “Free Basics” mobile app, which offers unlimited free access to a short list of online services, is the centerpiece of their efforts so far. While most critical commentaries around the launch of the project centered on net neutrality issues or conflicts of interest (Best 2014; Imtiaz 2014; Lopez 2014), a constitutive surveillance approach situates Internet.org within Facebook’s broader economic strategy of enveloping a global population in its surveillance ecosystem.

However, surveillance in the modern era has come to describe so many processes, to be exercised by so many people for such a variety of reasons, and to be undertaken

using a wide range of methods. Far from clarifying or validating the field, the “Snowden revelations” of overreaching state surveillance in 2013 threw up a series of new questions and complications (Lyon 2015). If “surveillance” constitutes social media – what kind of surveillance? Undertaken by whom? To what end?

In response to these questions, this chapter recognizes that social media surveillance must be considered in four different (yet blurry and overlapping) forms: economic, political, lateral, and oppositional. These four forms of surveillance are at some moments competitive, at others cooperative, and regularly indistinguishable. In constituting social media, they stake out territory which is won and lost, expanded and contracted, and contested and cohabited. They make up – rather than a static hierarchy, or a flat plane of monolithic surveillance – a lively ecosystem. A more accurate summary would be to say that a “logic” (or a series of “logics”) of surveillance (indeed, a series of “surveillances”) constitute social media. These logics – of accumulation, transparency, knowability, exchange, security, competition, and others that will be addressed below – make up surveillance *as an apparatus*, per Michel Foucault, of disciplinary, biopolitical, and governmental power strategies.

Economic surveillance is undertaken by corporate agents for the purpose of making profits; for example, Facebook’s surveillance of its users to produce valuable data profiles and inform its competitive business. Political surveillance is engaged by agents of the state (or on behalf of the state) for matters of governance and security, such as the National Security Agency’s (NSA) use of social media data in “full-take” surveillance. Lateral surveillance is the self-reflective monitoring social media users undertake of one another; for example, in the everyday practices of “Facebook stalking.” Finally, oppositional surveillance is an umbrella term for the practices of counter-surveillance, sousveillance, obfuscation, and surveillance-negotiation which challenge the hegemony of the other forms. These four surveillance forms are not an exhaustive or discrete taxonomy – certain practices may fall outside this schema, many straddle the lines between them, and they interact in complicated ways, as will soon become obvious – but they account for the majority of surveillance activity online.

Similar typologies of surveillance abound in the field. Daniel Trottier’s (2012a) four-part schema of lateral, institutional, market, and policing “models” of surveillance on social media closely resemble the forms in this chapter, while David Lyon (2007) writes of military, state administration, workplace, policing, consumption and place-based “spheres” of surveillance. Trottier and Lyon adopt slightly narrower categories than the umbrellas of economic and political surveillance used here, and both overlook the important function of surveillance resistance – the arrangement and specificity of such schemas is more context-dependent than absolute.

In an unflinchingly gloomy article, Henry Giroux describes the cumulative surveillance function of states, corporations, and willing neoliberal subjects as a “regime” far outpacing George Orwell’s “Big Brother” (2015, pp. 111–13). The complicated intersections of what this chapter terms economic, political, and lateral surveillance are for Giroux, above all, a collaborative effort to acculturate surveillance acceptance within a neoliberal population primed to exchange its last vestiges

of privacy for shreds of entertainment, security, and consumption. We live, today, in a “post-Orwellian” surveillance society:

Orwell could not have imagined either the intrusive capabilities of the new high-powered digital technologies of surveillance and display, nor could he have envisioned the growing web of political, cultural and economic partnerships between modes of government and corporate sovereignty capable of collecting almost every form of communication in which human beings engage. (Giroux 2015, p. 113)

Through the perspective of constitutive surveillance, such co-operations of powers are indeed central to the production of a generalized state of surveillance – a “dominant organizing practice” – within which surveillant social media would thrive. However, the disjunctions, disagreements, and struggles between surveillance forms are themselves productive of the overall surveillance apparatus which constitutes social media as a complex and contested discursive arena. Contrary to Giroux’s overarching “regime” of surveillance, a schema which distinguishes economic, political, lateral, and oppositional surveillances highlights how they are productive of social media not only in their collaborations, but also their confrontations.

The rest of this chapter will show how each of these four forms of surveillance can be seen to fundamentally constitute Facebook, demonstrating the value of an approach that understands surveillance to be foundational, rather than incidental, to the operation of social media. First, however, it interrogates further the notion of constitutive surveillance and situates it within existing literature and Foucauldian critical theory.

Constitutive Surveillance

The default perspective on the relationship between these diverse forms of surveillance and social media sees the two as separate, yet linked, technologies. This understanding implicitly configures social media as an advance or evolution upon previous communication media that has been subverted and degraded by the subsequent integration and attachment of surveillance, mainly for financial gain and political control (see Fuchs et al. (2012, p. 4) for a brief rundown on celebratory “Web 2.0” appraisals by Manuel Castells, Henry Jenkins, and others). Social media’s wealth of personal data, taste, social connections, affiliations, and so on is in this view co-opted or appropriated by surveillance after the fact, but the platform itself – which cultivates this data – is innocently outside the machinations of surveillance.

For example, the concept of the “surveillant assemblage” emphasizes that contemporary surveillance “is driven by the desire to bring systems together, to combine practices and technologies and integrate them into a larger whole” (Haggerty and Ericson 2000, p. 610). Certainly, contemporary surveillance has a unique capacity for interoperability and convergence, but this perspective implicitly considers the automatic collection of data as apart from surveillance, and distinct from the

convergence of data sets into the “larger whole” of the surveillant assemblage. Contrastingly, the constitutive perspective identifies a function of surveillance already at play in the production of “systems,” “practices,” and “technologies” that cultivate such data.

Returning to Lyon *et al.*, surveillance is the “dominant organizing practice” contributing to social media. Surveillance does not attach itself to the data-collecting processes that are both enabled and necessitated by social media, instead they are – to adopt the cliché – “always already” determined by surveillance logics. This is especially clear in examples of economic and political surveillance: the desire to produce valuable, meaningful information skews platforms towards cultivating and extracting personal data, while state-mandated backdoors literally constitute surveillant access points in the infrastructure of social media. But it also raises interesting questions around lateral and oppositional surveillance: has a normalized discourse of interpersonal transparency and confession – Giroux would say narcissism (2015, p. 111) – dictated the user uptake of Facebook, or is it Facebook that has transformed social relations into casual voyeurism and intense “front-stage” profile management? To what extent has opposition to surveillance successfully changed Facebook? How much of Facebook functions the way it does today because of the pressures and creativity of innumerable moments of resistance?

Principally, this framework seeks to identify critical avenues for studying social media surveillance and to dispel the rhetoric with which it valorizes itself by adjusting in a small but crucial way how theorists configure the relationship between surveillance forms and social media. This is not a merely semantic argument; the constitutive perspective of surveillance builds upon a Foucauldian framework, conceptualizing surveillance as an apparatus within a “micro-physics” of power, and social media as an institution of that power.

The project of Foucault’s oeuvre was to identify the historical workings of power, its crystallization into strategies of subjectification, its production of knowledge and truth, and its context as an arena of struggle against the continual reassertion of hegemony. To this end, he developed a distinctive theory of power as a field or context: a “multiplicity of force relations” between the objects within its purview – rather than something “acquired, seized, or shared” (1978, pp. 92–3); “a perpetual battle rather than a contract regulating a transaction or the conquest of a territory” (1979, p. 26). Power according to Foucault is not visible or measurable in itself, but in the crystallized relations between objects that it joins together and pulls apart; it acts upon everything and attaches to all objects (people, technologies, discourses) a vector and a velocity; it is not a dominant, all-encompassing force, but it takes effect in “strategies” of power with an innate and broadly unified direction (the supremacy of the sovereign, the jurisdiction of law, the health of the population, the docility of the proletariat, the optimization of productive forces, the veridiction of certain discourses, the management of the aleatory, the extinction of impurity, and so on). Power is not a “group of institutions and mechanisms,” “a mode of subjugation,” or “a system of domination exerted by one group over another,” but the context and medium in which these effects become visible (1978, p. 92). In *Discipline and Punish* (1979), Foucault described the crystallization of power in the strategies of

discipline and the institutions of individual training, while *The History of Sexuality* (1978) demonstrated that, rather than “repressing” sexuality, the technologies of biopower produced new discourses which situated sexual practice in relation to science, religion, and the emerging “economic and political problem” of population (1978, p. 25). Biopower, as Foucault developed the concept throughout *The History of Sexuality* and in a later lecture series at the Collège de France, consists of two “poles”: an individualizing “anatomo-politics of the human body,” and a populational, species-level, “‘biopolitics’ of the human race” (Foucault 2003, p. 243).

In later years’ lecture series, Foucault moved on to describing another movement of power, from a strategy of discipline to one of “governmentality.” In *Security, Territory, Population* (2009), he elaborated on the emergence of the population as an object of management by “security” techniques within the political economy of (especially neoliberal) capitalism under the label of governmentality (2009, p. 144). Governmentality functions by establishing and adjusting the limits of a relatively open social field, within which individuals may freely pursue their interests and desires. The field is arranged and maintained such that the pursuit of these normative aspirations – to be healthy, wealthy, successful, safe, and so on – aligns with the goals of the population (as conceived by liberal democratic government) and does not step beyond the realm of permitted activity. That is, the individual right to “life, liberty and the pursuit of happiness,” as enshrined in the US Declaration of Independence, both empowers and obliges the individual to lead a healthy, hardworking, conspicuous-consuming, law-abiding life. “Desire is the pursuit of the individual’s interest,” Foucault writes, “this desire is such that, if one gives it free play, and on condition that it is given free play, all things considered, within a certain limit and thanks to a number of relationships and connections, it will produce the general interest of the population” (2009, p. 101).

In the wake of his own analysis of Foucault’s work (1988), Gilles Deleuze updated this strategy of power for the digital era in “Postscript on the Societies of Control” (1992). Couched now in the specific technological framework of computing and the internet, Deleuze describes the operation of power becoming post-disciplinary (1992, p. 3). The control societies dispense with the need for “internal subjugation” because they effect a universal modulation of power; power today operates continuously across and between the formerly discrete institutions – it makes environmental interventions, rather than individual ones. The disciplinary enclosures – factories, schools, prisons, barracks – are “molds,” Deleuze writes, “but controls are a *modulation*, like a self-deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point” (1992, p. 4). This flexible and all-encompassing, yet softer vision of population management maps squarely onto the internet – and particularly social media. Social media is broadly permissive of minority difference, to the extent that it is capitalizable and docile; it gently renders subjects productive always and anywhere, unlike the discrete spatio-temporal enclosure of the factory; and it is a perpetually transforming space that is forever testing, honing, evaluating, and individualizing its service (see Nicholls (2016) for a detailed account of the control

society's individualization of modulating power flows through wearable fitness technologies).

Foucault's disciplinary societies, governmentality, and biopolitics, and Deleuze's societies of control have all provided salient theoretical backgrounds for surveillance studies critiques. The famous panopticon prison, which – through the threat of unverifiable visibility – made power function "automatically" in its prisoners (Foucault 1979, p. 201), was (alongside "Big Brother") the dominant model of surveillance theory until at least the new millennium, and remains essential. "Post-disciplinary" approaches to surveillance, correlating to the explosion of the internet and social media, have leaned increasingly on the alternative metaphors in Foucault's work (e.g., Haggerty 2006; Barreneche 2012; Ceyhan 2012; see also Lyon 2006, 2007).

Importantly, the operations of power throughout the strategies described by Foucault and Deleuze necessitate pervasive, detailed, and increasingly-sophisticated forms of surveillance. As well as the panopticon mechanism, the disciplines inaugurated an apparatus of administrative surveillance in the form of detailed record-keeping; biopolitics necessitated comprehensive scientific and statistical surveillance to identify and categorize the overall biological phenomena of populations; governmentality generalized an actuarial logic of security and sees the emergence of economic surveillance designed to cultivate and direct normative aspirational desires; and control automates, universalizes, and further "dividualizes" all of these surveillance processes via the dissolution of institutional divisions and the interconnection of digital technologies (Deleuze uses "dividual" to describe an altogether new form of subject, composed of "masses, samples, data, markets, or 'banks'" [1992, p. 5], and resembling the "data double" [Haggerty and Ericson 2000] rather than the disciplinary individual). Throughout and across these developments of power. The different strategies of power that Foucault describes are not historically-discrete, he stresses, but exist concurrently in a "system of correlation" with sovereign "juridico-legal mechanisms" (2009, p. 22), wherein one strategy in a given moment becomes dominant over the others, surveillance constitutes an overarching apparatus for enabling and expressing disciplinary, biopolitical, and governmental aims.

Foucault tells us that the production of knowledge and truth is essential across discipline and governmentality, and surveillance knowledge has a privileged veridiction in relation to those strategies of power, wherein a watchful guard, an administrative bureaucracy, a CCTV camera, an electronic loyalty card, or a simulative algorithm inherently unveil otherwise concealed or unknowable truths. Wher-ever these strategies of power are at play, surveillance may be deployed as an "organizing principle," hence its centrality to financial endeavors (such as Facebook), in political interests (the NSA), to mediated social relations (social media users), and even in resistance to surveillance, which occurs from within the surveillance paradigms that Foucault and Deleuze describe. Surveillance's fundamental "power-knowledge" authority thus precedes and constitutes social media as, at its heart, a technology of surveillance.

Economic Surveillance

Economic surveillance is the most significant determining factor in the constitution of Facebook. A binary between surveillance for economic and political purposes is established or assumed in the work of many surveillance theorists: Massimo Ragnedda (2011) describes ‘state’ and ‘corporate’ actors in surveillance, while Christian Fuchs (2011) teases it out of Toshimaru Ogura’s (2006) and Oscar Gandy’s (1993) work and distinguishes the two forms by their means of enforcement – political surveillance threatens individuals with “the potential exercise of organised violence (of the law) if they behave in certain ways that are undesired,” whereas economic surveillance exerts “the violence of the market that wants to force them to buy or produce certain commodities and help reproduce capitalist relations by gathering and using information on their economic behaviour with the help of electronic systems” (2012, p. 43). This provides a starting point for a definition of constitutive economic surveillance, which can be expanded with reference to emerging literature around “surveillance capitalism” (Zuboff 2015), and the Foucauldian/Deleuzian framework undergirding the notion of constitutive surveillance.

As argued above, a surveillance apparatus has always accompanied the strategies of power that organize societies, yet Lyon *et al.* note that surveillance’s organizational effect has “perhaps over the past 40 years” become dominant – coinciding with the emergence of in-depth and electronic economic applications of surveillance in sorting and categorizing people for differential treatment, rewards, sanctions, and opportunities. It is widely known today that Facebook’s scarcely fathomable profits are owed mostly to the collection and use of personal data in targeted advertising; Fuchs’ definition gestures towards this function.

A theory of economic surveillance drawn from Foucault and Deleuze emphasizes a series of characteristics: this form of surveillance is continuous and in-depth, tracking rather than recording in one space; it is simulative and future-oriented; it trends towards converging systems and databases; it is permissive of minority differences to the extent they are valuable for marketing and pose no threat to the smooth operation of power; its central objective is to identify and foster productive aspirations and desires; it works through the production of “data-doubles” – online profiles which parallel, yet distort, embodied individuals (Haggerty and Ericson 2000); it invests in surveillance knowledge a high degree of veridiction – fundamentally, social media is predicated on the belief that everything is knowable, measurable, and capitalizable through surveillance; and its bottom line is always to make profits for corporate shareholders. In what ways are these characteristics visible as constitutive factors of social media?

Shoshanna Zuboff conceives of a “new logic of accumulation” emerging alongside preoccupations with big data, which she terms “surveillance capitalism”: a “new form of information capitalism [which] aims to predict and modify human behavior as a means to produce revenue and market control” (2015, p. 75). What is new in Zuboff’s pronouncement is that this logic of accumulation becomes “the default business model for most online companies and start-ups” (2015, p. 81). This means that the drive to generate valuable surveillance data is at the heart of these new

companies, a notion which clearly echoes this chapter's thesis of "constitutive surveillance." As well as its grounding in Foucauldian critical theory, what sets this chapter apart from Zuboff's "surveillance capitalism" is the acknowledgement that different surveillances to the merely economic – namely political, lateral, and oppositional – also contribute to the constitution of social media platforms.

News stories about the surprising depth, breadth, or moral irresponsibility of economic surveillance seem to surface almost daily: *The Guardian* reports that Tinder responded to a journalist's request for her data with 800 pages of deeply personal, detailed information (Duportail 2017); *The Washington Post* describes how, using credit card records, Google has begun to evaluate the effect of their online ads on purchases in brick-and-mortar stores (Dwoskin and Timberg 2017); and until *ProPublica* journalists drew attention to it, Facebook allowed advertisers to target users with the algorithmically-generated interests "Jew hater," "How to burn jews," and "History of 'why jews ruin the world'" (Angwin et al. 2017).

What is clear in these and countless other examples – and what Zuboff's framework emphasizes – is that the data collection capabilities implicit in every new "smart" or algorithmic, start-up, app phenomenon, or social media feature are not secondary or incidental, but instead the *developmental starting point* of these properties. Echoing the Lyon et al. quotation at the beginning of this chapter, Zuboff writes, "The key point here is that when it comes to the market sphere, the electronic text is already organized by the logic of accumulation in which it is embedded and the conflicts inherent to that logic," (2015, p. 77), and the logic of accumulation on social media is fundamentally surveillant. Tinder, for instance, is a product of the decades-old online-dating service model. Match.com was started in 1993 and first went live in 1995. Writ large and made profitable by its surveillant "logic of accumulation." In taking up the position that Tinder's monetization of personal data is not incidental but designed-in to the app, it becomes clear that – if anything – the matchmaking service it offers is secondary to its data-capture; the extraction of more data is always the principle objective. Tinder impels users to offer up increasingly intimate personal data, such as characteristics of favored matches; times, durations, and locations of app usage; content of embarrassing interactions with other users; consumer taste information on Facebook profiles; and all of the "secondary implicit disclosed information" that is extracted from users' behaviors and preferences (Acquisti quoted in Duportail 2017). Zuboff's surveillance capitalism critique, like the constitutive surveillance framework being put forth in this chapter, can be directed in the same way to technologies like Amazon's "Alexa," and other "intelligent" home personal assistants; or to Facebook's location check-ins, a feature added out of competition with FourSquare, which improved the locational and consumer taste dimensions of its profiling; or to every "Smart" device being shovelled out of Silicon Valley and onto the Internet of Things.

This surveillance critique is also brought usefully to bear on social media acquisitions, which reveal a lot about the direction Facebook, Google, and others envisage for themselves in the long-term. Two Facebook examples are Onavo and Oculus VR, acquired in 2013 and 2014 respectively. Onavo is a data analytics company whose iOS app "Onavo Protect" claims to "keep you and your data safe

when you browse and share information on the web” (Onavo Inc. 2017), but which also – rather hypocritically – provides its parent company with data on app usage across the iPhone device. Facebook used this information to gain a competitive edge over Snapchat, who it sought to challenge with the rollout of Instagram’s “Stories” feature; *Engadget* reports that “The social network looked at aggregated info about the frequency and duration of app use to determine that Snapchat use slowed down soon after Snapchat-like Instagram Stories became available” (Fingas 2017). Facebook’s use of Onavo data for live feedback on how their changes and features fare against competitors indicates their willingness to invest against users’ privacy and consumer interests, in anti-competitive surveillance applications which capture users in their crossfire.

The second example, Oculus VR, was a tech start-up focused on developing a virtual reality (VR) headset (the “Oculus Rift”) principally via crowdfunding until Facebook acquired the company in 2014. Austin Walker notes that fans and financial “backers” of Oculus were dismayed that the Rift’s “DIY aesthetic and ethic” might be trampled in the “fences of [Facebook’s] enclosure,” but he also points out that “play happens under techniques and technologies of control and surveillance” (2014, p. 441). Nothing has surfaced so far about surveillant applications of Facebook’s VR technology, but a constitutive approach to surveillance is immediately suspicious of what surveillant logics are at play in the acquisition of Oculus VR, and how Mark Zuckerberg *et al.* may see VR in the future of Facebook’s advertising apparatus. Based on the characteristics of economic surveillance listed above – its simulative focus, capture rather than erasure of difference, and epistemological veneration of surveillance knowledge – how might VR improve economic surveillance?

Simply put, a social interaction in VR is an interaction wholly mediated – eyes, ears, and voices are extended across space by sensors, controllers, and microphones that can record everything. Facebook Spaces, a VR “hangout” app currently in development, indicates how this could work, although exactly what metrics it is already capturing are unknown (under “Privacy,” the Oculus download page for Facebook Spaces only links to Facebook’s platform-wide data policy, which does not rule out broad surveillance applications of VR (Facebook VR 2017; Facebook 2017b)). The Oculus Rift application puts friends – represented by cartoonish customizable avatars – in live-action 360-degree video settings to interact, play around, and rudimentarily explore. It is not hard to imagine that the economic surveillance potential of such a scenario, using equipment routed through Facebook’s servers, would produce a wealth of data along new metrics: how users speak, to whom they talk, and precisely what they say; what in-world advertisements catch their eyes, how they react, and whether they provoke further action; not to mention new dimensions to Facebook’s often unnerving research interests, which most infamously produced the “emotional contagion” study of group dynamics (Kramer *et al.* 2014). “Scientific Surveillance,” describing the use of social media data in research – with or without consent – marks a plausible fifth form of surveillance constituting social media, as the emotional contagion study exemplifies. See Schroeder (2014) for more discussion of this emerging surveillance paradigm. Zuckerberg sees Spaces-style digital hangouts and experiences as a viable alternative

to interpersonal meetings, “unlock[ing] new worlds for all of us” (Zuckerberg 2014) – constitutive surveillance and surveillance capitalism emphasize the potential costs of these new worlds.

Returning to the characteristics of economic surveillance and its function in a Foucauldian apparatus of surveillance, it is clear that Facebook’s acquisitions express the strategies of governmentality and control societies. Onavo and Facebook Spaces – assuming Facebook’s goals for VR align with the course plotted here – undertake a “soft,” but detailed surveillance which is permissive of users’ desires, yet seeks in the long term to cultivate normative aspirations via finely-grained targeted advertising, and the universalization of Facebook at the cost of competitors. In another example mentioned in the introduction, the constitutive surveillance approach also unveils the long-term economic surveillance value at the heart of Facebook’s seemingly altruistic Internet.org project. These characteristics of economic surveillance do not attach themselves to Facebook’s expanding business, but precede and premeditate its every expansion.

Political Surveillance

Economic surveillance is the most obviously constitutive of social media platforms, but the owners and managers of a social media platform are not the only group who influence what it looks like or how it works: users represent another group, as the following sections on lateral and oppositional surveillance will explore, but states’ security agencies are the third group and the focus of this section. Their governmental and security aims indelibly constitute Facebook as an apparatus of political surveillance.

Returning again to Fuchs’ economic/political distinction, in the case of political surveillance, “individuals are threatened by the potential exercise of organized violence (of the law) if they behave in certain ways that are undesired, but watched by political actors (such as secret services or the police)” (2012, p. 43). Again, this marks a useful starting point for an understanding of political surveillance online, but it also evinces Fuchs’ view of surveillance as fundamentally panoptic, as the subjects of surveillance “should be forced to behave or not behave in certain ways because they know that their appearance, movements, location, or ideas are or could be watched by surveillance systems” (2012, p. 43). The view that surveillance works because subjects are aware of it does not hold up in an internet context of surveillance which thrives precisely on being secretive and unobtrusive, and monitoring subjects at their most unsuspecting and natural. A “chilling” disciplinary-panoptic effect – where subjects take up self-surveillance and limit their online activity – may still occur (see Stoycheff 2016), but it is not the primary goal of “full-take” surveillance.

The objective of political surveillance is still the management of the population in the terms of the nation-state, but a more nuanced concept of security, in the governmental and biopolitical terms alluded to earlier, better accounts for the state’s involvement in social media. “Security” for Foucault refers not only to the “National

Security” discourse that has become dominant post-9/11, but to a calculative or actuarial logic for balancing individual and collective interests, in order both to produce the space for individual economic autonomy discussed above, and to secure the economic, social, and biological health of the population (again, as conceived within liberal democracies). Foucault describes security as the “essential technical instrument” of governmentality (Foucault 2009, p. 144), maximizing the veridiction of statistical knowledge and simulation, which become the technical solutions to all manner of risks – from the national security level to the individual one.

A biopolitical streak to political surveillance also constitutes social media. Biopolitics grasps its “surface of intervention” as a mass with populational processes that can be managed and improved – such as life expectancies, death rates, births, and illnesses – and within these it seeks to establish “a sort of homeostasis” (Foucault 2003, p. 246). This requires security mechanisms “installed around the random element inherent in a population of living beings so as to optimise a state of life” (Foucault 2003, p. 246). As in the governmental and control societies strategies, biopolitical security mechanisms seek to establish a manipulable regularity within the population, rather than to discipline each individual. Whereas sovereignty was ultimately the power to “make die,” biopolitical regulation “consists in making live and letting die” (Foucault 2003, p. 247), and it does this by inserting “caesurae,” or breaks within the population – by establishing limits, categories, and disjunctures between who must be made to live (in the manner of the aspirational, neoliberal, governmental subject described earlier), and who is extraneous, counter-productive, and risky, and may die (a civic or social, if not literal death). Foucault characterizes these breaks within the population as a form of racism: they preserve the “purity” of the population with the Darwinist logic that “if you want to live, the other must die” (Foucault 2003, p. 255).

Political surveillance, then, must be understood not as merely panoptic or Orwellian, but within a broad strategy of simulating, identifying, and distributing risks via statistical judgments and calculations. Security, in these terms, aims not only to limit terror attacks, but to grasp and balance the many processes of populations with which governmentality concerns itself. Continuing in this Foucauldian schema, the characteristics of political surveillance are as follows: it is animated by a logic of security which – despite how it is framed and justified – extends beyond matters of “national security” to a general security apparatus of the population; it is, like economic surveillance, fundamentally simulative – focused on predicting and managing the future – and it places utmost veridiction on surveillance knowledge, especially statistical and actuarial figures; it seeks to identify by calculation, statistical evaluation, and simulation the risks and clashes between individual and collective interests, and establish an acceptable balance; it does not preclude more direct disciplinary violence or “chilling,” but that is not its mandate; it exists in what Giorgio Agamben calls a perpetual “state of exception” (2005). Agamben uses this framework to critique the USA PATRIOT Act of 2001 for its dehumanization of prisoners of war. Title II of the Patriot Act also provided the legal platform to expand the scope of surveillance by US spy agencies, continually operating beyond the hazy lines of legality and justified by exceptional threats to the stability of democracy; and

finally, related to this state of exception, it has a sharp biopolitical edge which identifies breaks within the population between who must live, and who may die. These characteristics of political surveillance constitute social media in ways that are not always obvious and were largely unknown (or unverified) until Edward Snowden's 2013 dissemination of top secret NSA documents.

The Snowden files have described many tools and protocols at work in the NSA. The initial revelations channeled through *The Guardian* were that Verizon had been forced to hand over metadata. Metadata refers to "data about data," as opposed to "content," but – despite spy agencies' efforts to downplay it – metadata can become very invasive when analyzed or contextualized in targeted ways en masse, for millions of Americans' phone calls (Greenwald 2013), and – the following day – that the data servers of nine US companies, including Facebook and Google, were being accessed by the NSA and FBI in a program code-named PRISM (Gellman and Poitras 2013). Although the implicated companies denied the claims, *Washington Post* reporters note that the scale and complexity of the taps was such that "the FBI and NSA would be hard pressed to build in back doors without active help from each company" (Gellman and Poitras 2013), and a senior NSA lawyer confirmed that PRISM data collection "occurred with the 'full knowledge and assistance of any company from which information is obtained'" (De quoted in Ackerman 2014).

Naturally, a constitutive political surveillance ethos is at the heart of these data collection programs. According to Snowden,

they, the NSA specifically, targets the communications of everyone. It ingests them by default. It collects them in its system and it filters them and it analyses them and it measures them and it stores them for periods of time simply because that's the easiest, most efficient, and most valuable way to achieve these ends. (Snowden quoted in Greenwald and Poitras 2013)

This mass surveillance logic has gradually seduced agencies like the NSA or Britain's Government Communications Headquarter (GCHQ) away from more targeted strategies. Lyon stresses that mass surveillance of metadata "is no mere outcome of technological potential . . . but of specific approaches to risk management in security industries and of consumer clustering in marketing" (2015, p. 141). This gestures to the argument advanced in this chapter, that the NSA's national security-motivated surveillance must be contextualized within a broader meaning of security that extends throughout governmentality as the default means of risk management and distribution.

Political surveillance is most literally constitutive of Facebook in its installation of backdoors which fundamentally alter (indeed, weaken) the infrastructure of Facebook. The data – both meta and content – that Facebook invites from its users is of huge value to the security project of political surveillance. By its very volunteered nature, it is categorized and systematized along biopolitical lines, lending itself to the institution of categories across spectrums of race, gender, education, religion, and political affiliation. The demands by American Customs and Border Protection to access the social media information of Muslim citizens

returning to the US – and the use of violent force when one citizen refused – are a salient example of the biopolitical intersection between economic and political surveillance (EFF 2017).

In concrete terms, political surveillance constitutes social media via legal impositions on corporations, but more abstractly, the generalized security apparatus which bestows utmost veridiction on surveillance knowledge is at the heart of the whole social media project, resting as it does on the simulation of probabilities, the distribution of risks, and the efficiency of algorithms. On this point, the categorical divide between economic and political surveillance appears tenuous – Foucault's lesson in governmentality and its specific articulation of security was that these organizing, calculating impulses are capillaries along pathways that appear apolitical, and distant from the state.

Yet, as the introduction of this chapter described, the different surveillance forms “stake out territory,” rather than overlapping or stacking uniformly. The battle between economic and political surveillance, borne out in regulations and lawsuits, is a clear example of this. As with economic surveillance overreach, news stories about such legal clashes seem to appear almost daily. In May of this year, Facebook's economic surveillance desire to converge databases ran up against the European Union's strict data protection rules, when it sought to share data from WhatsApp (which it acquired in 2014) with the rest of the company, contradicting EU merger rules (Scott 2017). More recently, Ireland referred to the EU Court of Justice to determine the validity of data transfer channels between the US and EU, used by Facebook and intercepted by the NSA, which make EU citizens vulnerable to surveillance in contravention of their Charter of Fundamental Rights (Carolan and Edwards 2017). Tellingly, the US government joined Facebook in opposing the referral, on the grounds that “US law, Privacy Shield and other measures afford adequate protection for data privacy rights of EU citizens” (Carolan and Edwards 2017).

Thus, political surveillance also contributes to the discursive and technical constitution of Facebook by contesting and limiting its economic surveillance. These examples highlight the essential need in surveillance studies for careful and contextualized analysis of the complex tensions and collaborations between economic and political surveillance institutions, and between nation-states and unions.

Lateral Surveillance

“Lateral surveillance” is the term used by Mark Andrejevic, who describes it as “not the top-down monitoring of employees by employers, citizens by the state, but rather the peer-to-peer surveillance of spouses, friends, and relatives” (2005, p. 481). “Lateral” is the descriptor favored here because of this “flat” contrast with the deeply asymmetrical political and economic surveillance hegemonies, and the counter-hegemonic direction of oppositional surveillance. Elsewhere, “social,” “peer,” and “interpersonal” surveillance describe many of the same processes.

Taking up a constitutive position that surveillance is “the dominant organizational logic of late modernity” (2012b, p. 320), Trottier writes, “Facebook, for instance, organizes relations between peers . . . Users watch over each other, as opposed to communicating directly with one another” (2012b, p. 320). Trottier notes that social media users are simultaneously the agents and subjects of what he calls “interpersonal surveillance” (2012b, p. 320). Alice Marwick agrees that “Social media has a dual nature in which information is both consumed and produced, which creates a symmetrical model of surveillance in which watchers expect, and desire, to be watched” (2012, p. 380). It is this dual-subjectivity which makes the lateral form of surveillance on social media arguably the most “panoptic” of the four in this schema: the subjection of “being watched” functions automatically in the user, who knowingly curtails their behavior for an unverifiable audience (see Foucault 1979, pp. 202–5). Despite Fuchs’ assessment that political and economic surveillance articulate this disciplinary strategy, Marwick and danah boyd found (albeit pre-Snowden) that bosses or parents viewing their online activities were of much more immediate concern to most users (2010). This highlights for Marwick that social media’s ostensible “flattening” of relationships belies a micro-physics of power indicated by the persistence of hierarchical roles like “parent” or “employer” (2012, pp. 379–80).

One common factor across the scholarship of Trottier, Marwick, and others is that the systematic practices of watching which characterize social media usage are inherently tethered to another systematic practice – of self-surveillance and differential impressions management, as social spheres are flattened into one audience of “Friends” Google sought to address precisely this issue of clashing social spheres with the “Circles” feature on its own social networking site, Google+, which never fulfilled its potential to rival Facebook. This may be understood through the lens of Erving Goffman’s social performance (see Pearson 2009) or Zygmunt Bauman’s society of consumers (Bauman 2007; Bauman and Lyon 2012), but within this constitutive surveillance framework it is most fruitfully linked to Foucauldian conceptions of power.

The expectation of being watched functions to enforce carefully self-censored, normative behavior online, and to tease out savvy demonstrations of cultural capital. In other words, the knowledge that users’ online behavior will be scrutinized by their peers – and not only in the moment they occur, but indefinitely in the future – induces “a state of conscious and permanent visibility that assures the automatic functioning of power” (Foucault 1979, p. 201). This automatic functioning of power serves to closely govern the way social media is taken up, enabling practices that demonstrate normativity and social capital within a peer group, and discouraging behavior that falls outside those bounds. That being said, the characteristics and boundaries of what constitutes “normativity” within a group are highly mobile and complex, as the phenomenon of “Weird Twitter” suggests (for an overview of Weird Twitter, see Herman and Notopolous (2013)). Weird Twitter users employ an absurd non-sequitur comic style which demands specialist in-group knowledge to “get” or reproduce. Similar flaunting of broader normative expectations (which itself becomes normative within a community) appears on Facebook, often as a form of

opposition (and obfuscation) to the impositions and expectations of economic and lateral surveillance. As Marwick summarizes,

In social media sites, users monitor each other by consuming user-generated content, and in doing so formulate a view of what is normal, accepted, or unaccepted in the community, creating an internalized gaze that *contextualizes* appropriate behaviour. (Marwick 2012, p. 284, original emphasis)

Lateral surveillance is not exhaustively disciplinary, but by subjectifying users with “internalized” self-surveillance via the unverifiable surveillance of others (and especially authoritative others), it produces a more panoptic arrangement than the other surveillance forms.

Thus the characteristics of lateral surveillance which constitute social media are: it is asynchronous, unverifiable, and may search and replicate long-archived information; it engenders a dual subjectivity of surveillance agent and knowing subject; this self-aware subjectification may be empowering, though on Facebook it still exists within social hierarchies; it appears to demonstrate a shift or loss of privacy values, although the impositions to share – both from peers and platforms (see Zuboff 2015, pp. 83–4) – and the “context collapse” of private/public dichotomies (Marwick and boyd 2010) complicate this movement; finally, lateral surveillance populates the social framework of Facebook and other social media platforms with idealized, or at least carefully crafted, performances by surveillance-conscious users. The dual impulses to monitor others and to conform to the expectations of peers thus constitute the user experience of Facebook; it is inherently governed by logics of visibility, normativity, and complex new negotiations of privacy.

Oppositional Surveillance

It is ultimately user activity that populates and animates a social media platform with content. Its users thus indelibly constitute Facebook as a live social arena, including in ways that challenge the hegemony of economic, political, and lateral surveillance. Resistance is visible on Facebook, and it cannot be disentangled from power’s surveillance apparatus. Surveillance studies has developed a number of concepts for making sense of resistant counter-surveillant practices, including “sousveillance” (Mann et al. 2003), surveillance as empowering exhibitionism (Koskela 2004), and “obfuscation” (Brunton and Nissenbaum 2013). This section will examine these concepts under the umbrella of “oppositional surveillance,” a fourth surveillance form that is constitutive of Facebook.

“*Sousveillance*” explicitly reverses the hierarchy of “surveillance,” replacing the French prefix meaning “over” with another, meaning “below”; sousveillance is thus watching from below, an inversion of the asymmetry of power in political and economic surveillance (Mann et al. 2003, p. 332). Mann et al. relate sousveillance to “*détournement*,” meaning “rerouting,” as it fulfills “the tactic of appropriating tools of social controllers and resituating those tools in a disorienting manner” (2003,

p. 333). In 2003, this mainly referred to using video cameras to return scrutiny onto authority figures, most famously in the example of the 1991 Rodney King video. The American activist organization “Cop-Watch” continues this tradition of sousveillance, using handheld cameras and mobile phones to film police arrests – especially of people of color – where violent police misconduct may erupt (see also Steele 2016), but sousveillance may also occur online, “where citizen journalism and publishing (leaked) information about surveillance actors can be seen as forms of watching back” (Galić et al. 2017) – as can more mundane practices, like archiving the tweets of political representatives.

Hille Koskela argues that surveillance cannot be theorized today as a purely negative, unpleasant experience, but instead the plurality of surveillance modes and motivations may produce situations where there is “some exhibitionist fascination in being seen” (2004, p. 203), which may be empowering. By embracing transparency, individuals refuse “regimes of order” and “regimes of shame” which regulate society and internalize control, liberating themselves from the disciplinary effects of surveillance, and the side-effects of confidentiality (2004, pp. 207–8). This slightly paradoxical form of opposition might be more accurately called “surveillance negotiation,” as it does not seek to counter or avoid surveillance, but to engage it on oppositional terms. Galić et al. warn that “emerging forms of self-tracking . . . in combination with participation as a design principle could be seen as a façade or illusion of self-control, where actually users are being tracked and traced in the background” (2017), meaning that while a pleasurable or exhibitionistic embrace of transparency may be empowering, it also continues to bolster the hegemony of political and economic surveillance. In any case, exhibitionist negotiations of surveillance constitute Facebook by populating it with a user attitude of self-promotion and over-sharing.

Data obfuscation may be another practice which negotiates surveillance, as much as opposing it. Finn Brunton and Helen Nissenbaum write, “Obfuscation is the production of misleading, ambiguous and plausible but confusing information as an act of concealment or evasion,” (2013, p. 164). Jamming dataveillance systems with incorrect or unclear information makes it harder for economic or political agents to discern useful patterns, rendering surveillance less valuable. The most prominent example of obfuscation to date occurred late in 2016, when over one million people used Facebook’s “check-in” feature to support Dakota Access Pipeline protestors in the US (Levin and Woolf 2016). By checking in en masse at the Standing Rock Indian Reservation, participants hoped to obfuscate political surveillance efforts to identify protestors by their Facebook locations. More quotidian examples of obfuscation, like using a fake profile name – despite being against the Facebook terms of service – abound.

These oppositional and negotiated practices of surveillance resistance constitute Facebook on a content level – as its user-generated content reflects sousveillance, exhibition, and obfuscation – as well as on the level of the platform, as Facebook responds (at least superficially) to privacy concerns raised by users. These responses include simplifying privacy settings and terms of service, changing default sharing settings, and incorporating a “Privacy Check-up” directing users to their settings. It

is worth noting, however, that Facebook frames privacy in individual terms, and mostly as privacy *from other users* (i.e., lateral surveillance) rather than privacy from Facebook itself, or from spy agencies (economic or political surveillance).

The key point regarding oppositional surveillance – in the Foucauldian terms this chapter has pursued – is that resistance is an immanent element within the micro-physics of power. “Where there is power,” Foucault writes,

there is resistance, and yet, or rather consequently, this resistance is never in a position of exteriority in relation to power . . . Instead there is a plurality of resistances, each of them a special case: resistances that are possible, necessary, improbable; others that are spontaneous, savage, solitary, concerted, rampant, or violent; still others that are quick to compromise, interested, or sacrificial; by definition, they can only exist in the strategic field of power relations. (Foucault 1978, pp. 95–6)

Oppositional surveillance constitutes Facebook, because resistance is *itself a constitutive element of power*, and thus the tools and the agency to challenge or escape hegemonic surveillance are always also contained within it. The tools of social media may be used precisely to unveil, challenge, and hold to account its surveillant abuses. The individual freedom that Facebook valorizes and savors for providing a truthful insight into consumerist subjectivity is simultaneously the individual freedom to enact sousveillant scrutiny, to find empowerment in exhibitionist negotiation, or to clog the machinery of the surveillance apparatus with obfuscating misinformation.

Fuchs *et al.* are not optimistic that these “innumerable points of confrontation” (Foucault 1979, p. 27) represent a genuine challenge to the hegemony of internet surveillance. Much has been written and will continue to be written about the internet’s inherent potential for counter-power, counter-hegemony, and counter-surveillance, “But these potentials are asymmetrically distributed” (Fuchs *et al.* 2012, p. 15). While the internet and social media exist in a stratified society, they will continue to reproduce what they call “an asymmetric dialectic that privileges the powerful” (2014, p. 15). Nonetheless (or perhaps precisely because they do not represent a real challenge to power), oppositional resistance to surveillance will not disappear while the other forms of surveillance continue, and will not cease to constitute social media as a contested space.

Conclusion

This chapter has sought to outline four forms of surveillance which constitute Facebook, and in so doing has highlighted the complexity of the power relations between those forms. The central argument advanced here is that logics of surveillance precede and determine social media on technological and discursive levels – they are immanent to social media, not secondary or incidental – and that these logics can be organized into a schema of economic, political, lateral, and oppositional surveillance.

This schema is an imprecise tool. On Facebook, the methods, motivations, and agents of these different forms are often indistinguishable, or else tangled in a knot of states, corporations, police, investors, security contractors, civil rights lawyers, activists, and 1.94 billion monthly active users. Foucault names this knot of complex relations “power,” and starts to untangle it by describing several strategies of power: economic surveillance sits squarely in the political-economic logic of governmentality; actuarial instruments of security and the essentialising categories of biopolitics begin to describe political surveillance; disciplinary panopticism offers one avenue to understanding lateral surveillance; and surveillance oppositions can be equally located in the relations of power they contest, “inscribed in the latter as an irreducible opposite” (Foucault 1978, p. 96). These are not one-to-one matches – power strategy-to-surveillance form – but they sketch an instructive overview of the differences between social media surveillances.

Foucault’s “panopticism” has been widely critiqued as an insufficient surveillance model in the digital age, but I would argue that the value of his project for surveillance studies is in showing how a surveillance apparatus functions across multiple strategies of power. With the societies of control, Deleuze bridges the gap between Foucault and today’s technologized world, demonstrating how social media emerges out of these strategies of power, and how surveillance thus precedes and determines its logics of capitalist accumulation, of biopolitical security, of interpersonal transparency, and of resistance.

References

- Ackerman S (2014) US tech giants knew of NSA data collection, agency's top lawyer insists. The Guardian, 19 Mar 2014. Available: <https://www.theguardian.com/world/2014/mar/19/us-tech-giants-knew-nsa-data-collection-rajesh-de>. Accessed 28 Sept 2017.
- Agamben G (2005) State of Exception (trans: Attell K). University of Chicago Press, Chicago
- Andrejevic M (2005) The work of watching one another: lateral surveillance, risk, and governance. *Surveil Soc* 2(4):479–497
- Angwin J, Varner M, Tobin A (2017) Facebook enabled advertisers to reach “Jew Haters.” ProPublica, 14 Sept 2017. Available: <https://www.propublica.org/article/facebook-enabled-advertisers-to-reach-jew-haters>. Accessed 28 Sept 2017
- Barreneche C (2012) Governing the geocoded world: environmentality and the politics of location platforms. *Convergence* 18(3):331–351
- Bauman Z (2007) Consuming life. Polity Press, Cambridge
- Bauman Z, Lyon D (2012) Liquid surveillance: a conversation. Polity Press, Cambridge
- Best M (2014) The Internet that Facebook built. *Commun ACM* 57(12):21–23
- Brunton F, Nissenbaum H (2013) Political and ethical perspectives on data obfuscation. In: Hildebrandt M, De Vries K (eds) Privacy, due process and the computational turn. Routledge, New York, pp 164–188
- Carolan M, Edwards E (2017) High Court asks ECJ to examine Facebook case. The Irish Times, 3 Oct 2017. Available: <https://www.irishtimes.com/news/crime-and-law/high-court-asks-ecj-to-examine-facebook-case-1.3242468>. Accessed 4 Oct 2017
- Ceyhan A (2012) Surveillance as biopower. In: Ball K, Haggerty KD, Lyon D (eds) Routledge handbook of surveillance studies. Routledge, Oxon, pp 38–45
- Deleuze G (1988) Foucault (trans: Hand S). University of Minnesota Press, Minneapolis.
- Deleuze G (1992) Postscript on the societies of control. *October* 59(3):3–7

- Dupontail J (2017) I asked Tinder for my data. It sent me 800 pages of my deepest, darkest secrets. The Guardian, 26 Sept 2017. Available: <https://www.theguardian.com/technology/2017/sep/26/tinder-personal-data-dating-app-messages-hacked-sold>. Accessed 28 Sept 2017
- Dwoskin E, Timberg C (2017) Google now knows when its users go to the store and buy stuff. Washington Post, 23 May 2017. Available: <https://www.washingtonpost.com/news/the-switch/wp/2017/05/23/google-now-knows-when-you-are-at-a-cash-register-and-how-much-you-are-spending>. Accessed 28 Sept 2017
- EFF (2017) Fear materialized: border agents demand social media data from Americans. Electronic Frontier Foundation, 25 Jan 2017. Available: <https://www.eff.org/deeplinks/2017/01/fear-materialized-border-agents-demand-social-media-data-americans>. Accessed 28 Sept 2017
- Facebook VR (2017) Facebook spaces Beta. Oculus [online]. Available: <https://www.oculus.com/experiences/rift/1036793313023466/>. Accessed 28 Sept 2017
- Facebook (2017a) Facebook reports first quarter 2017 results. Investor Relations [online]. Available: <https://investor.fb.com/investor-news/press-release-details/2017/Facebook-Reports-First-Quarter-2017-Results/default.aspx>. Accessed 28 Sept 2017
- Facebook (2017b) What kinds of information do we collect? Data Policy [online]. Available: <https://www.facebook.com/about/privacy>. Accessed 28 Sept 2017
- Fingas J (2017) Facebook knew about Snap's struggles months before the public. Engadget, 13 Aug 2017. Available <https://www.engadget.com/2017/08/13/facebook-knew-about-snap-struggles-through-app-tracking/>. Accessed 28 Sept 2017
- Foucault M (1978) The history of sexuality. Volume 1: An introduction (trans: Hurley R). Pantheon Books, New York
- Foucault M (1979) Discipline and punish: the birth of the prison (trans: Sheridan A). Peregrine Books/Penguin Books, Middlesex
- Foucault M (2003) Society must be defended: Lectures at the Collège de France, 1975–1976 (trans: Macey D). Picador, New York
- Foucault M (2009) Security, territory, population: Lectures at the Collège de France, 1977–1978 (trans: Burchell G). Palgrave Macmillan, Hampshire
- Fuchs C (2011) How can surveillance be defined? MATRIZes 5(1):109–133
- Fuchs C (2012) Critique of the political economy of web 2.0 surveillance. In: Fuchs C, Boersma K, Albrechtslund A, Sandoval M (eds) Internet and surveillance: the challenges of web 2.0 and social media. Routledge, New York, pp 31–70
- Fuchs C, Boersma K, Albrechtslund A, Sandoval M (2012) Introduction: Internet and surveillance. In: Fuchs C, Boersma K, Albrechtslund A, Sandoval M (eds) Internet and surveillance: the challenges of web 2.0 and social media. Routledge, New York, pp 1–28
- Galić M, Timan T, Koops B (2017) Bentham, Deleuze and beyond: an overview of surveillance theories from the panopticon to participation. Philos Technol 30(1):9–37
- Gandy OH (1993) The panoptic sort: a political economy of personal information. Westview Press, Boulder
- Gellman B, Poitras L (2013) U.S., British intelligence mining data from nine U.S. Internet companies in broad secret program. The Washington Post, 7 June 2013. Available https://www.washingtonpost.com/investigations/us-intelligence-mining-data-from-nine-us-internet-companies-in-broad-secret-program/2013/06/06/3a0c0da8-cebf-11e2-8845-d970ccb04497_story.html?utm_term=.cfbf2f7a4964. Accessed 28 Sept 2017
- Giroux H (2015) Totalitarian paranoia in the post-Orwellian surveillance state. Cult Stud 29 (2):108–140
- Greenwald G (2013) NSA collecting phone records of millions of Verizon customers daily. The Guardian, 6 June 2013. Available: <https://www.theguardian.com/world/2013/jun/06/nsa-phone-records-verizon-court-order>. Accessed 28 Sept 2017
- Greenwald G, Poitras L (2013) NSA whistleblower Edward Snowden: “I don’t want to live in a society that does these sort of things” – video. The Guardian, 9 June 2013. Available: <https://www.theguardian.com/world/video/2013/jun/09/nsa-whistleblower-edward-snowden-interview-video>. Accessed 28 Sept 2017.

- Haggerty K (2006) Tear down the walls: on demolishing the panopticon. In: Lyon D (ed) *Theorizing surveillance: The panopticon and beyond*. Willan Publishing, Devon, pp 23–45
- Haggerty K, Ericson R (2000) The surveillant assemblage. *Br J Sociol* 51(4):605–622
- Hermann J, Notopoulos K (2013) Weird Twitter: the oral history. BuzzFeed, 6 April 2013. Available: https://www.buzzfeed.com/jwherrman/weird-twitter-the-oral-history?utm_term=.okWppp0vyx#.mhP555MVmy. Accessed 28 Sept 2017
- Imtiaz A (2014) Nothing altruistic about Facebook's initiative to spread the Internet. *US Finance Post*, 6 Jan 2014. <http://usfinancepost.com/nothing-altruistic-about-facebooks-initiative-to-spread-the-internet-11862.html>. Accessed 28 Sept 2017
- Internet.org (n.d.) Our mission. [Internet.org](https://info.internet.org/en/mission/). Available: <https://info.internet.org/en/mission/>. Accessed 28 Sept 2017
- Koskela H (2004) Webcams, TV shows, and mobile phones: empowering exhibitionism. *Surveil Soc* 2(2/3):199–215
- Kramer A, Guillory J, Hancock J (2014) Experimental evidence of massive-scale emotional contagion through social networks. *Proc Natl Acad Sci USA* 111(24):8788–8790
- Levin S, Woolf N (2016) A million people “check in” at Standing Rock on Facebook to support Dakota pipeline protestors. *The Guardian*, 1 Nov 2016. Available: <https://www.theguardian.com/us-news/2016/oct/31/north-dakota-access-pipeline-protest-mass-facebook-check-in>. Accessed 28 Sept 2017
- Lopez A (2014) The drones of Facebook (and the NSA). *Counterpunch*, 3 Apr 2014. <http://www.counterpunch.org/2014/04/03/the-drones-of-facebook-and-the-nsa/>. Accessed 28 Sept 2017
- Lyon D (2006) The search for surveillance theories. In: Lyon D (ed) *Theorizing surveillance: the panopticon and beyond*. Willan Publishing, Devon, pp 3–20
- Lyon D (2007) *Surveillance studies: an overview*. Polity Press, Cambridge
- Lyon D (2015) The Snowden stakes: challenges of understanding surveillance today. *Surveil Soc* 13 (2):139–152
- Lyon D, Haggerty KD, Ball K (2012) Introducing surveillance studies. In: Ball K, Haggerty K, Lyon D (eds) *Routledge handbook of surveillance studies*. Routledge, Oxon, pp 1–11
- Mann S, Nolan J, Wellman B (2003) Sousveillance: inventing and using wearable computing devices for data collection in surveillance environments. *Surveil Soc* 1(3):331–355
- Marwick A (2012) The public domain: surveillance in everyday life. *Surveil Soc* 9(4):378–393
- Marwick A, boyd d (2010) I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media Soc* 13(1):114–133
- Nicholls B (2016) Everyday modulation: dataism, health apps, and the production of self-knowledge. In: Randell-Moon H, Tippet R (eds) *Security, race, biopower: essays on technology and corporeality*. Palgrave Macmillan, London, pp 101–120
- Ogura T (2006) Electronic government and surveillance-oriented society. In: Lyon D (ed) *Theorizing surveillance: the panopticon and beyond*. Willan Publishing, Devon, pp 270–295
- Onavo, Inc. (2017) Onavo protect – VPN security. iTunes [online]. Available: <https://itunes.apple.com/us/app/onavo-protect-vpn-security/id577491499?mt=8>. Accessed 28 Sept 2017]
- Pearson E (2009) All the World Wide Web's a stage: The performance of identity in online social networks. *First Monday* 14(3)
- Ragnedda M (2011) Social control and surveillance in the society of consumers. *Int J Sociol Anthropol* 3(6):180–188
- Schroeder R (2014) Big Data and the brave new world of social media research. *Big Data Soc* 1 (2):1–11
- Scott M (2017) E.U. fines Facebook \$122 million over disclosures in WhatsApp deal. *The New York Times*, 18 May 2017. Available: <https://www.nytimes.com/2017/05/18/technology/facebook-european-union-fine-whatsapp.html>. Accessed 28 Sept 2017
- Steele B (2016) Eric Garner anniversary: capturing the New York police on camera. BBC [video online]. Available: <http://www.bbc.com/news/av/magazine-36779022/eric-garner-anniversary-capturing-the-new-york-police-on-camera>. Accessed 4 Oct 2017

- Stoycheff E (2016) Under surveillance: examining Facebook's spiral of silence effects in the wake of NSA Internet monitoring. *J Mass Commun Q* 93(2):296–311
- Tippet R (2016) Corporate geographies: surveillance and social media expansion. In: Randell-Moon H, Tippet R (eds) *Security, race, biopower: essays on technology and corporeality*. Palgrave Macmillan, London, pp 81–100
- Trottier D (2012a) Social media as surveillance: rethinking visibility in a converging world. Ashgate, Farnham
- Trottier D (2012b) Interpersonal surveillance on social media. *Can J Commun* 37(2):319–332
- Walker A (2014) Watching us play: postures and platforms of live streaming. *Surveil Soc* 12 (3):437–442
- Zuboff S (2015) Big other: surveillance capitalism and the prospects of an information civilization. *J Inf Technol* 30(1):75–89
- Zuckerberg M (2014) I'm excited to announce that we've agreed to acquire Oculus VR Facebook post [online], 26 Mar 2014. Available: <https://www.facebook.com/zuck/posts/10101319050523971>. Accessed 28 Sept 2017



Lifelogging: Recording Life Patterns Tied to Daily Internet Usage

56

Chen-Yi Yu and Ji-Lung Hsieh

Contents

Introduction	1034
Conventional Sampling Methods for Daily Life Studies	1035
New Methods Supported by Mobile Technology	1037
Case Study: Using Mobile Phone Logs to Study Social Media Domestication	1039
Ethical and Privacy Concerns	1044
Conclusion	1049
Cross-References	1050
References	1050

Abstract

The chapter begins with reviewing and comparing conventional and current information and communication technology-assisted methods for data collection aimed at studying spatial and temporal activity patterns of daily life. In addition to comparing differences and the pros and cons of each method, we described a lifelogging study that makes use of cellphones to record users' movements, uses of apps, and screen on/off totally. Maps and timelines charts show regular spatial routines of daily movements and weekly temporal routine uses of social media. The results demonstrate how mobile technology can benefit daily life study. Furthermore, using the case study as an example, we discuss several practical privacy issues to balance the benefits of the data collecting method and the right to privacy of study participants.

C.-Y. Yu

Institute of Sociology, Academia Sinica, Taipei, Taiwan
e-mail: jeniyu@gmail.com

J.-L. Hsieh (✉)

Graduate Institute of Journalism, National Taiwan University, Taipei, Taiwan
e-mail: jirlong@gmail.com

Keywords

Lifelogging · Quantified-self · Daily life researches · Ethics of big data researches

Introduction

The start of a typical day may include picking up your smartphone and logging on to *Facebook* to read a news feed. During your commute to work, you may use the phone to read online news and occasionally chat with friends on *LINE/WhatsApp*s. After arriving at your office, you follow your daily routine by starting up your computer and checking one or more e-mail accounts. During the day you sneak a few peeks at *Facebook*. For lunch you go to a nearby restaurant with your friends, check *Facebook* while waiting for your food, take photos when the meal arrives, and upload them to *Facebook* or *Instagram*. Later in the day, you may use *LINE/WhatsApp* to tell your family that you won't be home for dinner because of the tasks you need to finish. After working overtime, you once again read a *Facebook* news feed, and while you are updating your status, you complain about working late so often. At home you may watch television, and if the shows don't capture your full attention, you may use your tablet to check e-mails and your social networking websites. Perhaps unable to sleep, you continue to swipe the smartphone screen, checking on whether you have received any likes or comments to your posts.

When these kinds of fragmented (and many times mindless) interactions are recorded, they reveal temporal and spatial aspects of daily life and communication patterns. However, they are still surprisingly difficult for researchers to investigate due to the fluid nature of people's everyday lives and the distinct ways they use technology to interact with social media. Since technology has become a central part of our everyday lives, these interactions have become parts of unconscious and intuitive routines that cannot be accurately analyzed using conventional surveys or interviews, since such methods frequently overlook the contexts in which intuitions are or are not transferred to cognition. Hermes (1995) was among the first to observe that for interviewees, talking about their daily media and ICT usage (not to mention their communicative needs) is difficult. In this chapter we will compare methods for studying everyday IT-related life patterns and discuss the potential advantages of using emerging technologies to study everyday disconnected social media-based interactions and transactions. In the next section, we will review conventional methods for gathering data on daily Internet usage, including qualitative triangulation, daily reconstruction, and experience sampling. The limitations of approaches that demand complementary or replacement methods will be discussed. Our goal is to identify an efficient but nonintrusive way to collect data on life contexts and interactions with social media.

As Berker et al. (2005) note, new technologies designed to monitor and log human activities can provide detailed, personalized, and long-term data on user behaviors and possible contradictions between what people do and what they say they do online. Thus, in the second section, we will review conventional methods

for researching the use of ICTs and social media and discuss some emerging methods (including mixes of old and new technologies such as context-aware experience sampling or CAES) for probing into daily Internet usage behaviors, especially an innovative method called *lifelogging* that is aimed at creating detailed and comprehensive records of user activities. In the third section, we will discuss a social media domestication study that we conducted as an example of using lifelogging for data collection and analysis. While new technology-assisted methods make it possible to resolve research challenges via the detection of how unobserved details help create accurate portrayals of our daily behaviors in terms of regularity, it is inevitable that new technologies will raise new ethical and privacy issues that we will speculate on in the fourth section. Also in that section, we will give a brief review of obligations and responsibilities that researchers must accept in order to minimize or eliminate potential harm to study participants.

Conventional Sampling Methods for Daily Life Studies

Now that information and communication technologies (ICTs) frequently occupy the center of daily routines, it is increasingly difficult for users to step back to understand how they use ICTs. Researchers are using data collection tools considered standard for longitudinal studies to understand ICT access, although they are often mixed with other methods commonly employed in social research. For example, Silverstone et al. (1991) created a “methodological raft” (“Methodological raft refers to the particular lattice of core research methods which have emerged in the study as a way of describing the location of each family-household in space and time” (Morley and Silverstone 1991).) to gather data and to construct accounts of ICT usage in households. The raft consists of participant observation, time use diaries, household maps, network diagrams, family albums, technology lists, personal-construct interviews, and media records, the combination of which provides a base for understanding how households use ICTs for self-articulation.

At least three other researchers or teams have created their own methods for gaining detailed insights into everyday life organization and the ways that ICTs fit into and shape household microsocial contexts. In the Netherlands, Frissen (2000) used a mix of in-depth interviews, observations made during interviews, semi-structured questionnaires, ICT-use diaries, mental maps, and network diagrams to gather data on everyday ICT usage. They describe in detail how this combination of approaches supports reconstructions of routinized behavior patterns. Nansen et al. (2009) describe a novel “cultural probes” method for identifying and interpreting rhythms that emerge from media-dense domestic contexts. They use what they call a “pack” of equipment including maps for tracing communication origins and destinations, color-coded stickers to record each technology user’s usage frequencies, cameras for taking snapshots of routines and novel domestic life activities, diaries for individual family members, and scrapbooks for organizing photos and written data. According to Nansen et al., the records provide “objects to think with” when analyzing daily conversations and activities focused on communication

technologies. Wang's (2014) investigation of how ICTs shape the daily life rhythms of undergraduate students made use of a mix of self-report diaries and third-person observations. Later data collection stages, which emphasized connections between Internet usage and female life rhythms, relied on empirical data taken from diaries, photos, and record sheets.

The reason for using multiple qualitative tools to collect data is to encourage participants to talk about and contextualize their daily technology usage, which helps researchers reconstruct behavior patterns that have become routinized (Frissen 2000). However, although multiple methods can produce bodies of detailed and contextualized data, they give rise to new challenges in areas such as data integration when multiple sources are used. After experiencing difficulties integrating a large body of data collected from multiple sources in the first year of a multi-year study, Haddon and Silverstone (1993) decided to discard certain methods during the second year. Part of the problem is the heavy reliance on self-reported information from study participants, which raises questions of data validity as well as intrusiveness in the lives of study participants. Note Wang's (2014) observation that her study participants expressed relief after finishing all of their recording processes, an indication of perceived inconvenience. Hence, balancing research contexts and minimizing burdens on study participants is a current goal for researchers.

There are at least three methods that have been used to record daily life actions:

- The diary method, which Ling and Haddon (2003) used to study participant phone calls (messages) activities. They recruited 93 participants to record each phone calls (including mobile phone and fixed phone) and text messages they sent or received during a 24-h period. Participants were asked to answer phone call purposes (especially those phone calls related to travels), phone types, and locations. Furthermore, they analyzed the influences of gender, generation, life stages, and the coordinating functions and symbolic meanings of mobile phones. Quite different from current mobile phone usage, they found that, in 2007, a majority of participants used fixed phones to coordinate travels while mobile phones to increase security and maintain social network.
- The experience sampling method (ESM), in which participants are requested to instantly, or at least regularly, record their thoughts during events such as playing video games to measure concepts such as degree of immersion. ESM not only obtains context information and reduces the loss of memory recall it also links objective behaviors with subjective feelings, thereby helping researchers to analyze relationships between behavioral regularity and personalities, contexts, and environmental interactions (Csikszentmihalyi and Larson 1987).
- The Day Reconstruction Method (DRM), which Kahneman et al. (2004) developed in response to DSM and ESM limitations regarding study participant evaluations of daily life activities. Participants in DRM studies are asked to imagine their lives as episodic scenes in a movie and to put individual scenes in order as a means of reviewing the previous day. Gaps are filled in via who-what-when-where-why questions meant to establish more authentic understandings of relevant contexts, experiences, and actions. The goal is to help informants view

their lives as continuous episodes. This method may be less intrusive, but it still requires significant time and effort that can trigger negative feelings.

It is important to remember that human-technology interaction features high environmental mobility, time fragments, and a range of devices and platforms (Crabtree et al. 2006). None of the three methods is capable of accurately depicting fluid and fragmented experiences over time, meaning that researchers will continue to suffer from challenges to data analysis. Further, scholars still must deal with potential burdens on study participants when they use either the diary method or ESM, as well as significant potential for data omission and selection bias associated with any method that requires participants to recall and record ideas and observations well after an event has occurred. Also note that in terms of sampling, ESM is limited to specific time periods and generally fails to reconstruct the time flow of individual days. Further, when participants are asked to concentrate on a process despite entering a flow state, they may be completely unaware of their physical/emotional reactions and the passing of time (Csikszentmihalyi 1991). In such situations, it is nearly impossible for informants to accurately record their thoughts and actions.

New Methods Supported by Mobile Technology

Several methods that show promise in terms of overcoming the abovementioned limitations are based on mobile technology. Intille et al.'s (2003) context-aware experience sampling (*CAES*) method can be used to detect contextual changes such as moving to places that have not been previously recorded in a database and to send requests to confirm them. Consolvo et al. (2007) designed an app "My Experience (Me)," which can automatically detect and record contextual information such as user location and activities to trigger notifications for purposes of sampling study participant activities and moods. The method not only reduces disturbances associated with conventional ESM it also records contextual information to verify participant responses and to note unintentional behavioral patterns. Similar to *Me*, *SocioXensor* (Mulder et al. 2005) used Bluetooth to detect and record physical proximities between users and others, which can be used to monitor local interactions. A web tool called the *Personal Analytics Companion (PACO)* (<http://www.pacoapp.com>) has been developed in support of designing cellphone-triggered ESM. Researchers can use *PACO* to send notifications to participants at specific locations at specific times or to follow mobile phone-based activities such as ending phone calls or listening to music. One advantage of this method is allowing researchers to investigate *in situ* experiences under different context. Another advantage is to decrease the potential for disturbing the lives of study participants while collecting trustworthy data. Participants needn't remember to record their activities. By use of mobile technology, they receive notifications passively.

Another example of mixing mobile technology with ESM is Riddle and Howell's (2008) use of text messages to study technology use traces among a group of Cambridge University students. The researchers sent out text messages at irregular

intervals and asked the study participants to answer a series of simple questions such as “Where are you?” “Who are you with?” “What ICT are you using?” and “How do you feel about this technology?” The message receivers were asked to record their answers using notebooks, cameras, and video and audio recorders. Afterward, the researchers held an informal focus group session for 35 participants who were asked to describe their technology usage. According to the raw data, ICTs have been completely integrated into the students’ lives, occupying every aspect of routine life and work. Their results also indicate that the frequency of social media usage differs across different cohort groups (Riddle and Arnold 2007; Riddle and Howell 2008).

Compared with ESM/DRM requesting users to record their life actively or passively, some researchers have attempted to use mobile phones to record all user activities in order to form complete digital memories (Shachtman 2004). According to Sellen and Whittaker (2010), such methods support recollections, reminiscences, retrievals, and reflections of past experiences so as to plan future activities. This method, known as lifelogging (O’Hara et al. 2008), originated from the *Memex* (“memory extender”) machine conceived by Vannevar Bush in 1945. Bush described *Memex* as a machine for storing books, documents, photos, and sound and for providing data links, annotations, and search functions. Bush imagined that *Memex* would 1 day serve as an extension of human memory and an information sharing device. His idea was considered a fantasy in the 1940s, but in 2001 Microsoft made the fantasy come true with a project it called *MyLifeBits*, a mechanism storing all of an individual’s personal information (e.g., articles, books, e-mails, pictures, phone calls, images, visited pages) over a lifetime. The service supports searches, visualizations, and annotations for data browsing and management (Gemmell et al. 2002). The device also tries to automatically create personal life stories by assembling information from different sources.

Gordon Bell, the lead *MyLifeBits* researcher, has been working on a “paperless life” since 1998. At first, he simply turned his articles, postcards, books, letters, memos, and photos into digital images. He then added the capability to record phone calls; to listen to radio stations; to watch videos and TV shows; to retain and search browsing histories, e-mails, and messages; and to access data on music listened to, computer monitors, and mouse and keyboard clicks. He then added a GPS function to record geographic location changes and experimented with wearing a *SenseCam* around his neck to automatically take photos (using infrared capability to detect changes in his surrounding environment). Over 6 years his digital library collected over 300,000 records. He could look up an old friend’s contact information, search photos, and provide physical data to his physician (Bell and Gemmell 2009). Reduced costs and miniaturization means that users can now clip their devices to their clothing, which has positive ramifications for researchers interested in recording data over the course of a day (*Narrative*, a wearable mini-camera that can be programmed to take a picture every 30 s and can also be used to capture everyday life data and to create digital memories.).

Whereas *MyLifeBits* requires multiple dedicated devices to trace life data, the current generation of smartphones, which are already integrated with multiple

sensors, offers more efficient and effective ways to record everyday life activities and actions. Between 2004 and 2005, the Human Dynamics Group of the MIT Media Lab conducted a “reality mining” experiment in which geo-location features and Bluetooth sensors (for inferring proximity) were used to record the daily routines and social interactions of study participants (Eagle and Pentland 2006). Daily visit data (in categories such as home, workplace, and “other”) and information from Bluetooth sensors to detect surrounding mobile phones carried by other study participants were used to predict potential social interactions. Focusing on location information from mobile phones, Ahas and Mark (2005) developed a *social positioning method (SPM)* to collect real-time data to study the spatial and temporal features of an individual’s life in modern society. In 2011 the Human Dynamics Group developed what it called a “funf” *open-sensing framework* that makes mobile phone data collection easier. Researchers can use the framework to design their own data collection methods, specifying multiple sensors to collect different forms of data at different sampling rates. Three years later the Cambridge University Computer Laboratory introduced a “device analyzer” Android app for researchers to use to collect data on cloud environments (Wagner et al. 2014), which is a convenient platform for studies and experiments that cover long distances or that cross national borders.

In summary, technology development is improving daily life data accuracy and efficiency, with the long-term collection of dense and multifaceted personal data becoming more possible using digital tools that compensate for the human tendency to lose, forget, or misplace objects and information. Further, these technologies are changing the form of data from snapshots of events to episodic recordings that contain rich contextual information (O’Hara et al. 2008), thereby capturing greater detail on temporal rhythms and interactions between people and technologies. The recording of such details can open windows into the daily lives of willing participants, allowing researchers with telepresence to locate more dynamic and sophisticated data. According to Ihde’s (2009) idea of the “hermeneutics of things,” scientists are increasingly capable of interpreting reality and people’s daily lives by “turning them into scientific objects” (107), thus creating new knowledge. Table 1 provides an overview of the methods discussed in this chapter.

Case Study: Using Mobile Phone Logs to Study Social Media Domestication

To show how using mobile technology as data collection tools can benefit qualitative researches, the chapter provides a case study of using cellphone to study social media uses in everyday life. The two primary tasks are to reveal how individuals use social media and how to depict human-technology interactions and experiences.

In an early study of social media uses on cellphone (Hsieh and Yu 2014), we used diary method to study the routine uses of social media apps with mobile phones (e.g., *Facebook*, *LINE*, e-mail, *Hangout*, messengers and chat programs, and phone calls) in a family. We noticed that behaviors that had become daily routines often resulted

Table 1 The methods reviewed in this chapter

Dairies	Participants are asked to immediately record their actions (e.g., phone calls, short messages, moving trajectories) by hand or using a camera. Ling and Haddon (2003) investigated how communication activities (i.e., phone calls and short messages) coordinate with individual movement trajectories. They recruited 93 parents (52 male) in dual-income families who had school-aged children, cars, and mobile phones. The study participants frequently used their phones to coordinate their activities
ESM	Participants are asked to state how they feel about specific events. For example, an amateur athlete may be asked to record how he feels during his daily training over 1 month (Csikszentmihalyi and Larson 1987).
DRM	Participants are asked to mark daily events with names for further recall several times per day and then asked to review, describe, and explain their events every evening. It is believed that temporarily marking events with names decreases a sense of disturbance in a study participant's daily life. Kahneman et al. (2004) have posted DRM documents at http://sitemaker.umich.edu/norbert.schwarz/files/drm_documentation_july_2004.pdf . In the first phase, participants must record each episode with a name. In the second phase, participants are asked to describe the context of each episode and how they feel about it, using Likert scales to measure responses to 12 items. Time required to finish all questionnaires has been reported as 45–75 min
Mobile phone-triggered ESM	<i>Personal Analytics Companion (PACO)</i> , see https://www.pacoapp.com/ . An Android app helps researchers design ESM experiments on a cloud. End users can join any experiment posted on the <i>PACO</i> app. The system sends notifications to all individuals who join the experiments according to specific sampling rules (e.g., when participants enter a specified area, when they hang up their phones, or once per hour). Several researchers have applied <i>PACO</i> to collect study participant responses. For an example, see Donti et al. (2015) Riddle and Arnold (2007) sent short messages to participants to remind them to fill out their questionnaires, rather than asking them to remember to record their events spontaneously. Their instrument can be found at http://www.matthewriddle.com/papers/Day_Experience_Resource_Kit.pdf
Context-aware experience sampling	Intille et al. (2003) used mobile phones to notify participants but tried to reduce disturbances to their lives. Their PDA app consists of motion and location sensors, a remote heart rate sensor, a camera, and a microphone for monitoring context changes. When such context changes are detected, messages are sent requesting participants to fill in questionnaires or to use their cameras or microphones to record their activities. To reduce a sense of intrusion, they allowed participants to fill out their questionnaires afterward Consolvo et al. (2007) invited 16 participants to use the <i>My Experience (Me)</i> app for a 4-week experiment. Participants who stayed at a fixed location more than 10 min received messages requesting them to fill out a questionnaire. They also used web-based diaries to ask qualitative questions. Participants were asked to explain why they visited locations and to rate them in terms of like/dislike. See http://myexperience.sourceforge.net/

(continued)

Table 1 (continued)

Total recall: MyLifeBits	Researchers who use <i>MyLifeBits</i> try to collect exhaustive data on all activities that can be digitalized (e.g., photos, link, visited websites) one per every 10 s (Gemmell et al. 2002). Next, they digitalize as many text articles, postcards, books, letters, memos, and photos as possible. A demo page can be found at http://research.microsoft.com/en-us/projects/mylifebits/mylifebitsdemo.aspx . After 6 years, Gemmell's digital library contained over 300,000 records (see also Bell and Gemmell 2009)
Mobile phone sensing and logging	<i>Funf open-sensing framework</i> (Aharony et al. 2011). <i>Funf Journal</i> and <i>funf in a box</i> can be found at http://www.funf.org/journal.html . Researchers and participants who use <i>funf</i> can adjust the app's sampling rate. Sense probes record information on location, activity, accelerometer data, battery strength, screen ON/OFF, running applications, and hardware. Data analysis reveals regular and irregular daily life routines and provides some evidence on goals of communication activities, social network dynamics, and behaviors (see also Eagle and Pentland 2006). Others have applied this method to studies of social diffusion (Madan and Pentland 2009) and public health and healthcare topics (Pentland et al. 2008). Their method was selected by <i>Technology Review</i> as one of the top 10 emerging technologies in 2008
	<i>Device Analyzer</i> (Wagner et al. 2014). This Android app, companioned with a website managed by the Cambridge University Computer Laboratory, supports data collection using cloud environments (https://deviceanalyzer.cl.cam.ac.uk/)
	Using digital traces for forming episodic memories. Rekimoto et al. (2007) collected daily visit data from three volunteers for 4 months to construct their life traces and activity routines, as well as irregular events preceding certain special events. Under such circumstances, using digital traces to form episodic memories can help researchers and participants to interpret meanings behind daily routines
	Social positioning method (SPM). Ahas and Mark (2005) recorded the daily visits of 30 participants over a 1-week period to study relationships between age and moving patterns. They suggest that daily visit map data can contribute to city planning and policy making goals such as traffic management and accident notification

in contradictions and inconsistencies between perceived/self-reported and actual usage as recorded on logs. The findings underscored what many researchers already acknowledge about the shortcomings of conventional data collection methods such as self-reporting, surveys, and brief interviews. As summarized by Wittmann (2009), time experience can be very under different mood and emotion. Some fragmental or routine behaviors can be lost in diary method.

We therefore recorded large amounts of data on ways that study participants used their mobile phones every day from March to August 2015 and then parsed and visualized data collected from an app installed on the participants' mobile phones. While we believe the method was successful in obtaining objective data, we learned that interpreting such a large body of data requires great effort.

Any worthwhile tool for monitoring daily activities must have the features of fast installation and removal, low cost, stable and acceptable long-term data collection, low invasiveness, and the ability to be operated autonomously (Intille et al. 2003). According to these criteria, ESM has significant shortcomings because it requires users to be contacted periodically and encouraged to fill in data on their own, thus making it difficult to ensure that changes in daily activities are recorded and raising questions about how accurate users are in describing their activities (Mulder et al. 2005). These shortcomings explain our motivation to use a phone-based data collection app that runs in the background. We considered two apps, *funf Journal* and *Device Analyzer*, respectively, developed by the MIT Media Lab Human Dynamics Group and the University of Cambridge Computer Laboratory. Both apps record user location, activity (using Bluetooth to detect proximity and accelerometers to detect movement), whether apps are turned on or off, and hardware information. Both offer cloud solutions, guidelines, and examples for data parsing. Our decision to use *funf Journal* was based on its easily accessible database and open-source framework. We collected on/off timestamps and social network app duration data for *LINE*, *WeChat*, *Facebook*, *Hangout*, and blogging and e-mail apps. We also used timestamp and screen on/off data to measure sequential app usage. Mobile phone geo-locations were recorded once every 10 min. We recruited 35 participants who were willing to share these kinds of data for 6 weeks. Participants were requested to submit their log files once per week to ensure data quality. We visualized the data and returned maps with daily movements and timelines of social media usage to each participant.

Based on the assumption that everyday life rhythms affect social media usage, our first step in data analysis was to visualize daily movement. Figure 1 presents an example of one participant's daily movement (location recorded once every 10 min) from April 8 to June 22, 2015. All of the participants moved between three or four fixed locations on a daily basis: office, home, MRT stations, and convenience stores near their homes. However, this data lacks time information; therefore we calculated distances between the most frequently visited sites in terms of movement sequences and speed of movement in two categories: transportation and walking. Figure 2 shows the highly regular daily movement and speed data for participant FoM10 – information that is not available in Fig. 1. An interview with FoM10 confirmed the data that we observed in the figures.

Figure 3 shows the social networking app usage of FoM10. For purposes of privacy protection, all apps with the exception of social apps and the main launcher were marked “other,” without being specifically identified. Compared to the daily life routine data shown in Fig. 2, app usage data indicate no regular routines except for the periods just before going to bed and immediately after getting up (Fig. 3). However, a different picture emerges in Fig. 4, which shows social app usage frequency, total duration, and average duration data. According to these data, a number of regular weekly routines emerge – for example, FoM10's frequent use of *LINE* on weekdays but infrequent use on weekends, although average duration was the same for both. Average duration for *Facebook* was higher on weekdays compared to weekends, but only a slight difference in frequency was noted. During

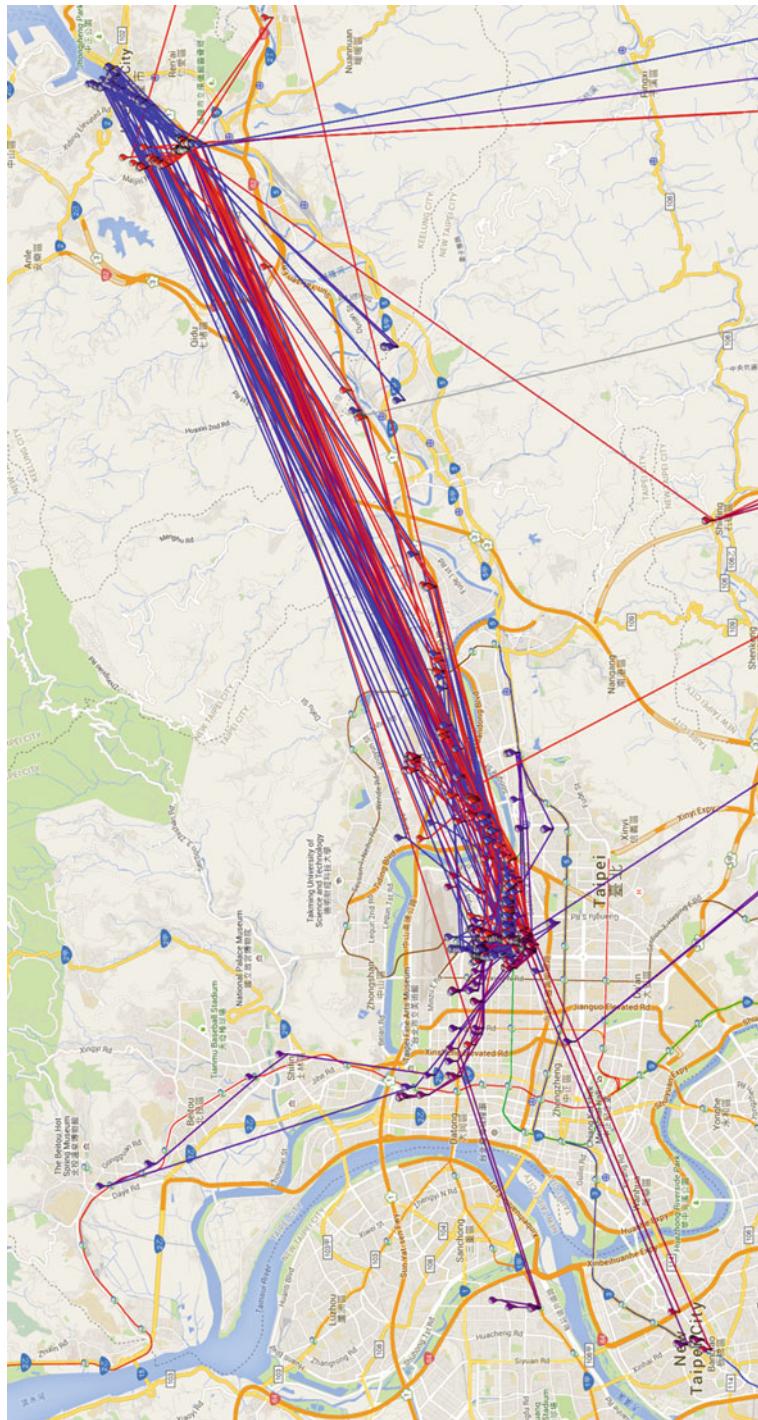


Fig. 1 Participant FoM10's daily movement over 6 weeks plotted on Google Maps

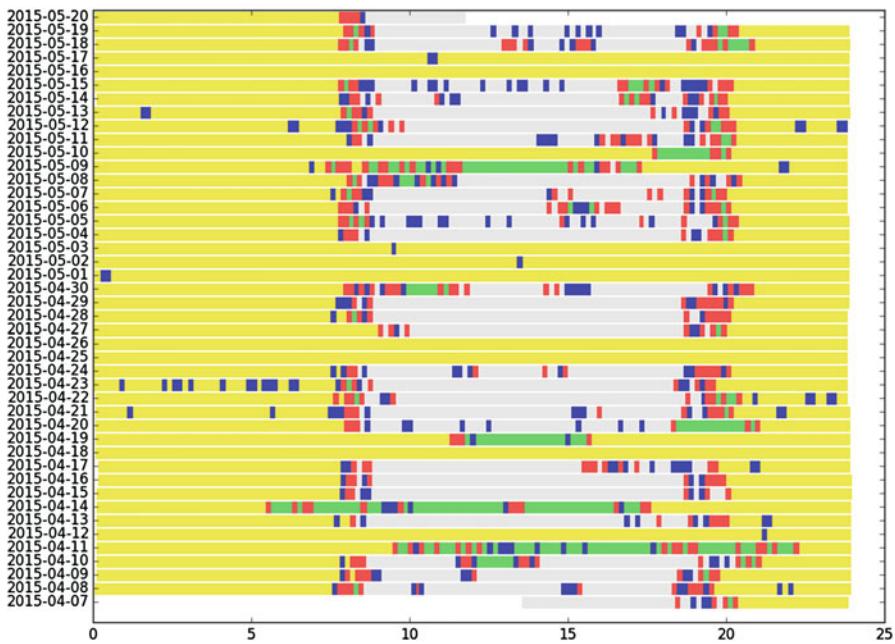


Fig. 2 FoM10's daily activities measured in terms of changes in moving speed. Gray, at work; yellow, at home; green, other places (more than 1); red, on-transportation; blue, walking

interviews we discovered that visualized daily and weekly patterns also helped the participants to recall what they did and to reconstruct their daily lives in terms of episodic presentation. For example, we found through our interview with FoM10 that he uses *LINE* as a tool for his job with an insurance company, which explains the much higher frequency on weekdays. The data for his *Facebook* usage confirmed that he uses it as his primary tool for communicating with friends on weekends but with only slight frequency changes between weekdays and weekends. The information confirms the visualized data in Fig. 2 – that is, FoM10 mostly stays at home and rarely communicates with others in person on weekends.

Ethical and Privacy Concerns

Before embracing a new technology or app for data collection, it is important to consider privacy and ethical concerns tied to potential abuses – especially in terms of information – i.e., an individual's claim to control the terms under which personal information, information identifiable to the individual, is acquired [and] disclosed (Kang 1998: 1203). Information privacy is concerned with the relationship between personal information and individuals. According to Kang (1998: 1207), personal information includes “an authorship relation to the individual (e.g., phone call, e-mail), a descriptive relation to the individual (e.g., blood type, birthday), and an

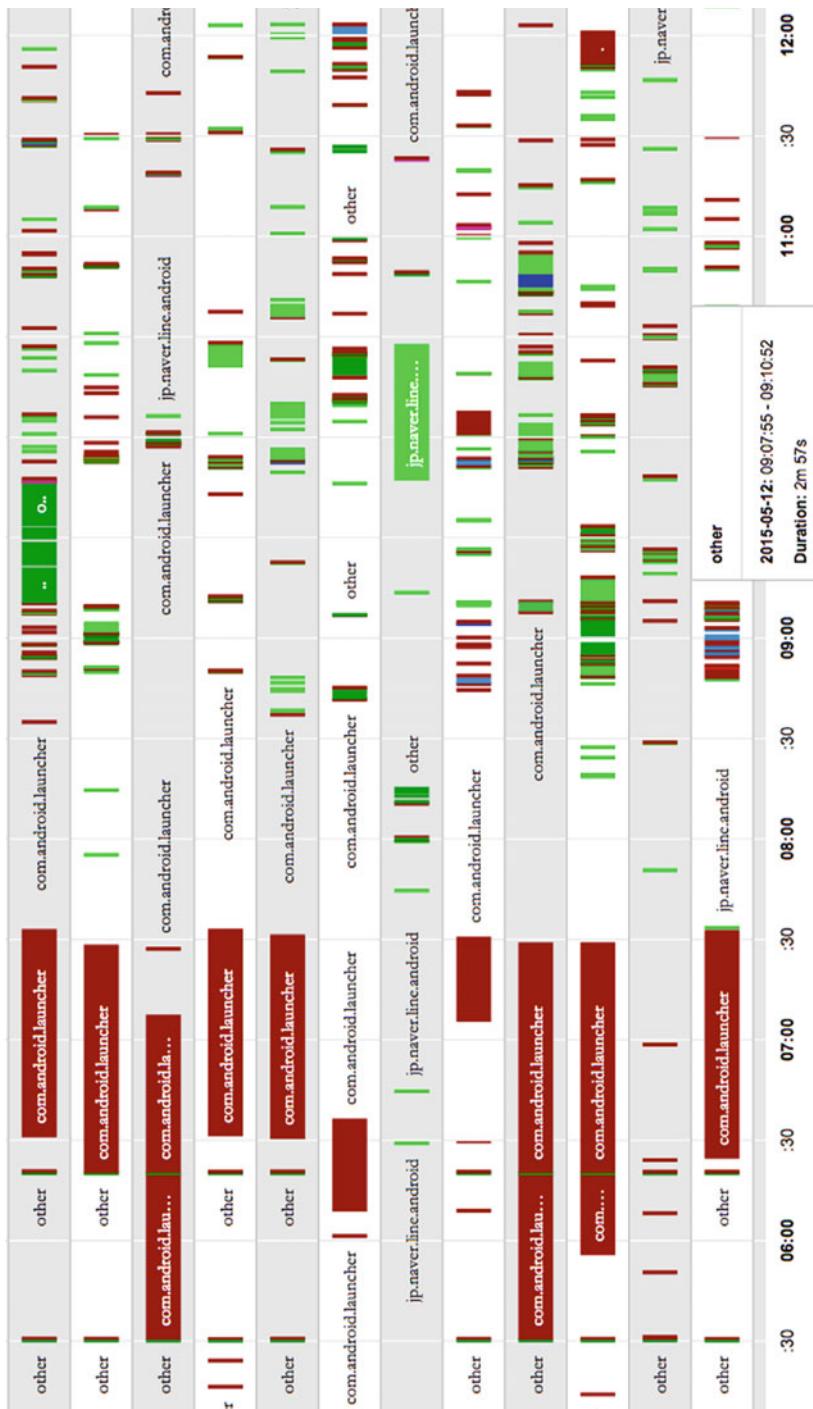


Fig. 3 Timeline report for FOM10's social app usage over a 14-day period. Apps not used for socialization purposes were marked as “other”

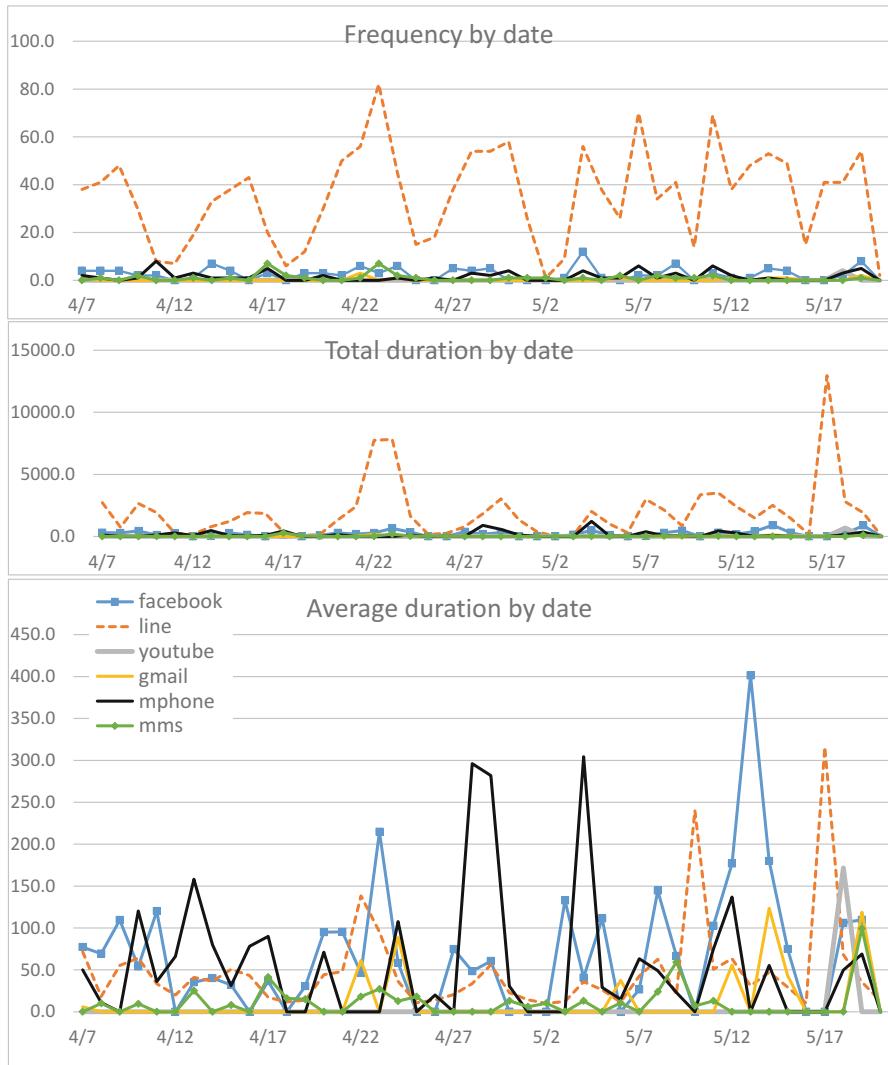


Fig. 4 FoM10's social networking app usage. Vertical gray line indicates Saturday activity

instrumental mapping relation to the individual (e.g., SID)." Kang notes that interconnected privacy clusters often emerge simultaneously – for example, being shielded in a house (spatial privacy) can reduce opportunities for the collection of personal information. Our main concern for the lifelogging data collection method is the protection of spatial and decisional privacy. Gray areas include information on mobile phone location and an individual's home territory. We acknowledge the possibility of combining information from multiple sources to execute personal digital traces – an example of Clarke's (1988) "dataveillance" in which databases are created to systematically store personal digital traces for questionable purposes.

Even when the person whose personal data are being collected remains anonymous, it is possible to compose an almost complete digital identity, including motivations and behaviors, from data collected via sources such as mobile phones, personal computers, wearable sports managers, and medical records (de Montjoye et al. 2015; Rawassizadeh and Tjoa 2010). Using only the spatial and temporal features of credit card transactions, de Montjoye et al. (2015) successfully identified 90% of over one million anonymous identities. Accordingly, a data gathering method such as lifelogging raises ethical questions regarding surveillance and the nature of memory. Participants in research studies risk having details of their lives exposed by data collection, even when the researchers take care to protect their identities. Lifelogging, which challenges the intrinsic quality of memory, can be viewed as a file cabinet containing representations of the past that are organized to facilitate retrieval. However, human memory is a constructive and interpretative act rather than a precise reproduction of previous events (Bannon 2006). Memories are colored by assumptions, mental models, and attitudes toward organized reactions and experiences from the past (Allen 2008; Bannon 2006). This raises the question of whether lifelogging is likely or not to extend human memory, with contradictions between computer memory and human memory causing conflicts and inconsistencies. Further, a method such as lifelogging uses tools that record all activities permanently, including failures, frustrations, and moments that individuals might not want to share. In other words, participants in studies that use lifelogging risk giving up their rights to be forgotten (Allen 2008; Rawassizadeh and Tjoa 2010).

Weitzner et al. (2014) have identified and summarized several risks tied to collecting personal data using the lifelogging method. They include re-identifying personal identifications from anonymous data, inaccurate data or models, unfair use of sensitive inferences regarding personal characteristics such as sexual orientation and spousal relationships, participants changing their behaviors due to their knowledge of being monitored, government abuse of data, and large-scale data breaches. However, the complexity of everyday human life in terms of time, environment, properties, and goals makes it difficult to use one set of standards to deal with all lifelogging-associated privacy issues. Table 2 presents some guidelines that Weitzner et al. found in the US Consumer Privacy Bill of Rights; we follow each rule with our take on privacy practices and ethical concerns.

In addition to the rules shown in Table 2, in our study, we also presented a three-page proposal for convincing our participants, including data collection purpose, process, scale and scope, and plans for data storage and anonymizing identifiable information, with a suggestion for periodically sharing descriptive and data visualization results with study participants. In our study, participants were informed about their data ownership, including the right to check accuracy, to retract data, and to remove themselves from the experiment at any time (see Pentland et al. 2008). Since the method entails the sending of data from participants to researchers, it is possible to guarantee that data will not be collected arbitrarily. As mentioned earlier, since the study goal was to increase our understanding of social media domestication, all non-social media apps were marked as “other” during the initial data processing phase. Our study was also reviewed by the Institutional Review Board

Table 2 Guidelines for privacy practices and ethical concerns

Description	Practical actions in our study
Individual control: “Consumers have a right to exercise control over what personal data companies collect from them and how they use it” (The White House 2012). Collecting personal data should give participants choices on the scale, scope, and sensitivity of the data (Weitzner et al. 2014)	Participants were told that they could stop the experiment at any time. The default setting of the app allowed 13 probes. We closed 7 unnecessary probes one-by-one in front of the participants. We also demonstrated how their activities would be recorded by opening several apps and then checking the growing number of uses
Transparency: “Consumers have a right to exercise control over what personal data companies collect from them and how they use it” (The White House 2012). Participants should be informed how, when, and why their data are collected and be provided additional mechanisms to trace the use of their data, which can prevent misuse (Weitzner et al. 2014)	During the 6-week study period, we asked participants to send back data by e-mail every week. We sent back visualized results and raw data within 48 h, helping the participants to understand how their data were being used and giving us the opportunity to check data accuracy
Respect for context: “Consumers have a right to expect that companies will collect, use, and disclose personal data in ways that are consistent with the context in which consumers provide the data” (The White House 2012). Researchers must guarantee that data collection, usage, and disclosure are consistent with the contexts in which the data are collected (Weitzner et al. 2014)	During interviews, we showed the participants our visualizations of app usage timelines and maps to assure them that their activities were being interpreted correctly. The interviewer listed her findings and discussed them with the interviewees
Security: “Consumers have a right to secure and responsible handling of personal data” (The White House 2012). Researchers must guarantee that data are collected and stored in a secure way and protect anonymous individuals from being re-identified (Weitzner et al. 2014)	Data were sent to us by the participants and stored on a PC hard disk that could not be accessed online, thus reducing the risk of malicious access. Only one of the researchers had access to identification information throughout the project
Access and accuracy: “Consumers have a right to access and correct personal data in usable formats, in a manner that is appropriate to the sensitivity of the data and the risk of adverse consequences to consumers if the data is inaccurate” (The White House 2012). In this way, users can easily access their data, thus helping to discover and detect potential data errors (Weitzner et al. 2014)	When installing the app, we adjusted the data collection frequency and duration settings in front of the participants. We asked them to send back data by e-mail once per week. Upon receiving data, we promised to send back visualization results and raw data within 48 h
Focused collection: “Consumers have a right to reasonable limits on the personal data that companies collect and retain” (The White House 2012). The data collection scale should be limited according to the study’s main purpose as claimed and described beforehand (Weitzner et al. 2014)	The apps were capable of recording data from all cellphone sensors. While the app default settings allowed 13 probes, we only used 6 and turned off unnecessary probes one-by-one in front of the participants

(continued)

Table 2 (continued)

Description	Practical actions in our study
Accountability: “Consumers have a right to have personal data handled by companies with appropriate measures in place to assure they adhere to the Consumer Privacy Bill of Rights” (The White House 2012). Researchers should be well-trained (including being well-informed about the details of the Consumer Privacy Bill of Rights) and responsible for the use of data (Weitzner et al. 2014)	There was a clear division of labor between the two researchers. One was responsible for participant recruitment and interviewing; the other was responsible for programming and data analysis and had no access to the personal information provided by the study participants

of the National Taiwan University Research Ethics Centre as part of an effort to guarantee responsibility. In future studies it is our strong recommendation that researchers accept all responsibility for data misuse and damage.

We also wish to once again emphasize the importance of following up the data collection process with personal interviews. In our case it was possible to interview all 35 participants; in larger studies, random sampling will be required. We noticed several situations in which digital records were inconsistent with interviewee responses. Two likely reasons are that participants forgot or tried to conceal their actions and that statistical model choice resulted in an interpretation bias. In others studies, interpretation bias may demand a second review of the raw data or the collection of new data. In our study, several participants frequently used *LINE* for short periods, but in interviews they reported using *LINE* for much longer periods. In some cases, participants may not have noticed that they had received *LINE* messages, necessitating a script to filter out unseen messages. This was one of the four scripts that we added based on our interview results, including recording phone shutdowns due to loss of battery power.

Conclusion

The emergence of new information technologies means that information surveillance is no longer the privilege of governments but is available to those involved in scholarly research. Data collection tools include sport training apps, healthcare apps, personal diaries, and medication notifications, among many others. The collected data can be organized so as to construct digital identities that include information on who we are, where we are at any moment, when we are there, what we say and do, and whom we interact with (Kang 1998). This raises many questions regarding data control and intrusions into our everyday lives. While those who perform surveillance often do so for our benefit, it is becoming increasingly difficult for those of us who do not want to be monitored to turn surveillance off. While the authors of this study have no control over the actions of governments, we can appeal to researchers and service providers to remain vigilant about the types of data they collect and what they do with it. In this chapter we reviewed conventional and

current ICT-assisted methods for data collection aimed at studying everyday life patterns. In addition to comparing differences and the pros and cons of each method, we described a study of social media uses using the lifelogging method that makes use of cellphones. We used this example to describe several practices aimed at guaranteeing the privacy rights of study participants.

Cross-References

- [Ethics of Social Media Research: State of the Debate and Future Challenges](#)
 - [Spatial Analysis Meets Internet Research](#)
-

References

- Aharony N, Pan W, Ip C et al (2011) Social fMRI: investigating and shaping social mechanisms in the real world. *Pervasive Mob Comput* 7(6):643–659
- Ahas R, Mark Ü (2005) Location based services – new challenges for planning and public administration? *Futures* 37(6):547–561
- Allen AL (2008) Dredging up the past: lifelogging, memory, and surveillance. *Univ Chicago Law Rev* 75:47–74
- Bannon LJ (2006) Forgetting as a feature, not a bug: the duality of memory and implications for ubiquitous computing. *CoDesign* 2(1):3–15
- Bell G, Gemmell J (2009) Total recall: how the e-memory revolution will change everything. Dutton, New York
- Berker T, Hartmann M, Punie Y et al (2005) Introduction domestication of media and technology. In: Berker T, Hartmann M, Punie Y (ed) Domestication of media and technology. McGraw-Hill Education, London
- Bush, Vannevar (1945) As We May Think. *The Atlantic Monthly* 176(1):101–108
- Clarke R (1988) Information technology and dataveillance. *Commun ACM* 31(5):498–512
- Consolvo S, Harrison B, Smith I et al (2007) Conducting in situ evaluations for and with ubiquitous computing technologies. *Int J Hum-Comput Interact* 22(1–2):103–118
- Crabtree A et al (2006) Working with digital records: developing tool support. In: Proceedings of the 2nd international conference on e-social science. ESRC, Manchester, 22–24 June 2006
- Csikszentmihalyi M (1991) Flow: the psychology of optimal experience, vol 41. HarperPerennial, New York
- Csikszentmihalyi M, Larson R (1987) Validity and reliability of the experience-sampling method. *J Nerv Ment Dis* 175(9):526–536
- de Montjoye YA, Radaelli L, Singh VK (2015) Unique in the shopping mall: on the reidentifiability of credit card metadata. *Science* 347(6221):536–539
- Donti PL et al (2015) Predicting the quality of user experiences to improve productivity and wellness. In: Twenty-ninth AAAI conference on artificial intelligence, Austin Texas, 25–30 Jan 2015
- Eagle N, Pentland A (2006) Reality mining: sensing complex social systems. *Pers Ubiquit Comput* 10(4):255–268
- Frissen VA (2000) ICTs in the rush hour of life. *Inf Soc* 16(1):65–75
- Gemmell J et al (2002) MyLifeBits: fulfilling the Memex vision. In: Proceedings of the tenth ACM international conference on multimedia, Juan les Pins, pp 235–238, 1–6 Dec 2002

- Haddon L, Silverstone R (1993) Teleworking in the 1990s: a view from the home. A report on the ESRC/PICT study of teleworking and information and communication technologies. <http://www.lse.ac.uk/media@lse/WhosWho/AcademicStaff/LeslieHaddon/TELREP.pdf>. Accessed 8 Aug 2015
- Hermes J (1995) Reading women's magazines: an analysis of everyday media use. Polity Press, Cambridge
- Hsieh JL, Yu CY (2014) An analysis on the rhythm of social media use. In: Proceedings of 4th international symposium on pervasive computing paradigms for mental health, Tokyo, 8–9 May 2014
- Ihde D (2009) Postphenomenology and technoscience. The Peking university lectures. Suny Press, New York
- Intille SS et al (2003) Tools for studying behavior and technology in natural settings. In: Proceedings of the 2003 ACM international joint conference on pervasive and ubiquitous computing. Springer, Berlin/Heidelberg, pp 157–174
- Kahneman D, Krueger AB, Schkade DA et al (2004) A survey method for characterizing daily life experience: the day reconstruction method. *Science* 306(5702):1776–1780
- Kang J (1998) Information privacy in cyberspace transactions. *Stanford Law Rev* 50:1193–1294
- Ling R, Haddon L (2003) Mobile telephony, mobility, and the coordination of everyday life. In: *Machines that become us: the social context of personal communication technology*. Transaction Publishers, New Brunswick, pp 245–265
- Madan A, Pentland A (2009) Modeling social diffusion phenomena using reality mining. In: *Proceedings of the AAAI spring symposium: human behavior modeling*. The AAAI Press, Menlo Park, pp 43–48
- Morley D, Silverstone R (1991) Media audiences: communication and context: ethnographic perspectives on the media audience. In: *A handbook of qualitative methodologies for mass communication research*. Routledge, London, pp 149–162
- Mulder I, Ter Hofte GH, Kort J (2005) SocioXensor: measuring user behaviour and user eXperience in conteXt with mobile devices. In: *Proceedings of measuring behavior*, Wageningen, pp 355–358, 30 Aug–2 Sept 2005
- Nansen B, Arnold M, Gibbs MR, Davis H (2009) Domestic orchestration rhythms in the mediated home. *Time Soc* 18(2–3):181–207
- O'Hara K, Tuffield MM, Shadbolt N (2008) Lifelogging: privacy and empowerment with memories for life. *Identity Inf Soc* 1(1):155–172
- Pentland A, Lazer D, Brewer D, Heibeck T (2008) Using reality mining to improve public health and medicine. *Stud Health Technol Inform* 149:93–102
- Rawassizadeh R, Tjoa AM (2010) Securing shareable life-logs. In: *Proceedings of the 2010 I.E. second international conference on social computing*. IEEE, Minneapolis, pp 1105–1110
- Rekimoto J, Miyaki T, Ishizawa T (2007) LifeTag: WiFi-based continuous location logging for life pattern analysis. In: *Location-and context-awareness*. Springer, Berlin/Heidelberg, pp 35–49
- Riddle MMD, Arnold DMV (2007) The day experience method: a resource kit. http://www.matthewriddle.com/papers/Day_Experience_Resource_Kit.pdf. Accessed 19 Aug 2015
- Riddle M, Howell C (2008) You are here: students map their own ICT landscapes Hello! Where are you in the landscape of educational technology? *Proc ASCILITE Melbourne* 1(1):802–808
- Sellen AJ, Whittaker S (2010) Beyond total capture: a constructive critique of lifelogging. *Commun ACM* 53(5):70–77
- Shachtmann N (2004) Pentagon kills lifelog project. *Wired News*. <http://www.wired.com/politics/security/news/2004/02/62158>. Accessed 19 Aug 2015
- Silverstone R, Eric H, David M (1991) Listening to a long conversation: an ethnographic approach to the study of information and communication technologies in the home. *Cult Stud* 5(2):204–227
- Wagner DT, Rice A, Beresford AR (2014) Device analyzer: understanding smartphone usage. In: *Mobile and ubiquitous systems: computing, networking, and services*. Springer International Publishing, Cham, pp 195–208

- Wang S (2014) Domesticating IM: the revelation, negotiation and recreation in IM communication. *Chinese J Commun Res* 25:161–192
- Weitzner D, Abelson H, Dwork C et al (2014) Consumer Privacy Bill of Rights and Big Data: response to White House Office of Science and Technology Policy Request for Information. <http://privacytools.seas.harvard.edu/files/privacytools/files/mitbigdataprivacycomments.pdf>. Accessed 19 Aug 2015
- Wittmann M (2009) The inner experience of time. *Philos Trans R Soc Lond Ser B Biol Sci* 364(1525):1955–1967. <https://doi.org/10.1098/rstb.2009.0003>

Index

A

- Aboriginal media, 191, 193
'Access'-ability, internet, *see* Internet
 'access'-ability
Acta, 775
ActionStation, 739
Activism model, 931
Activity theory, 518
Actor-network theory (ANT), 106, 118–123,
 447, 451–452, 518, 803, 863
Adaptive-predictive games, 950
Advanced Encryption Standard (AES), 697
Affective analysis of online movement, 917
Affective labor, 231
Affective news stream, 541
Affordances
 abstractions of, 344
 analyzing data, 343
 conceptual developments, 340–341
 definition, 338–340
 identifying, 343
 operationalizing, 343
 researching, 342
 score, 346
Algorithm construction games, 950
Algorithmic authority, 12
Algorithmic culture, 727
 algorithmic governance, 735
 algorithmic opacity, 734
 city's digital skin, 734
 description, 733
 geoharvesting and geofiltering, 734
 software sorting, 727
Algorithmic journalism, 377
Americans with Disabilities Act, 656
American University School of Communication
 Doctoral Program, 293
Analysis distribution games, 950
Analytical identity and difference, 1002–1005
Animated GIFs, 177
AnonOps, 151
Anonymous/anonymity, 478, 574, 576
 Antisec hackers, 156
 in anti-SOPA, 162
 collective digital predicament, 161
 DDoS attacks, 150
 entertainment, 148
 formidable PR machine, 161
 Fox news report, 148
 functioning democracy, 162
 HBGary, 152
 iconography, 148, 159
 internet relay chat (IRC) server, 150
 LulzSec with, 153
 online activity, 155
 operations, 154, 159
 OpStubenville, 158
 Op Tunisia, 152
 participants, 159
 power, 146
 project Chanology, 149
 provocations and publicity, 161
 Stratfor affair, 155
 Stuxnet, 146
 trolling, 146, 148, 150
 Twitter storm, 159
 Weapons of the Weak, 160
 WhyWeProtest, 149
 WikiLeaks, 151, 153
Anti-Counterfeiting Trade Agreement
 (ACTA), 155
Antisec hackers, 156
Antropomorphization, 534
Application Programming Interface (API),
 69, 71, 73, 74, 79, 670, 674, 678,
 685, 849, 862
Apps based research, 416, 421
Arab Media Outlook, 788

- ARTigo, 951
 Astro turfing, 368, 715
 Audiences, 550, 552, 553, 557, 559, 561, 564
 Avoiding harm, 570
- B**
 Barack Obama effect, 924
 Bay Area Rapid Transit (BART), 154
 Big data, 30, 36, 611, 613, 616, 621, 622, 768, 848, 858, 859, 862, 864, 866, 872
 analytics, 728–730
 assumptions, 674
vs. capta, 770
 characteristics, 769
 critiques and limits of, 677
 ethical challenges, 682, 684
 ethical concerns, 768
 ground campaign, 611–615
 issues with, 772–775
 limited access to, 685–686
 modes of information, 775–777
 objectivity and accuracy, 676–677
 participant observation and in-depth interviews, 675
 prevalence of, 670
 rise of, 673, 674
 Twitter, research on, 683
 value and limits of, 671
- Big data, in Hollywood film industry
 advantages and limitation, 557–560
 benefits and tensions, 560–562
 ‘blockbuster’ strategy, 553
 marketing campaigns, 552
 opening weekends, 552
 profit and investment, 552
- Big data studies, digital media
 access, 970
 cumulative advance, 969–970
 Facebook, 960–964
 lack of integration, 972
 limited number of objects, 971
 manipulation of behavior, 971
 new information and communication technologies, research on, 958–960
 powerful knowledge making behavior, 970
 ready-made data access, 970
 Twitter, 964–966
 Wikipedia, 966–968

- Big social data
 automated analysis, 51
 context of, 55
 insurmountable challenges in, 50
 interdisciplinarity, 50
 precarity of, 74–76
 research, 72–74
 Twitter, 68–72
 unprecedented volume of, 53
- Big UK Domain Data for the Arts and Humanities (BUDDAH) project, 500
- Bijker, W.E., 341
 Bill C-45, 186, 195
 Bitcoin, 628, 629, 632
 BITNET Relay, 386
 BitTorrent, 692
 Black Lives Matter (BLM), 680, 923
 Black propaganda, 712
 Black Twitter, 681
 Blair, Tony, 617
 Blended data, 674, 675, 679, 681, 682
 and big data (*see* Big data)
 challenges and limitations, 673
 Mapping Movements research, 672
 value of, 672
- Blockchain, 629, 636, 639–642
 Blog, 838
 Blogistan, 789
 Boltanski, Luc, 996
 Bourdieu, Pierre, 448, 450
 Box office, prediction of, 553–557
 Brainfuck, 697
 Broadband Stakeholder Group (BSG), 908
 Broadcast-search approach, 945
 Bureaucracy, 244
- C**
 CADS, *see* Corpus-assisted discourse studies (CADS)
 Canada, 301
 Canada Digital Collections site, 497
 Canvassing, 612, 613
 Capta
 big, 780
 as critique of data, 778–779
 critiques of, 779–780
 description, 770
 sumpta as, 777–778
 Cartel party, 618
 Castells, Manuel, 113, 117, 118
 Central Content Unit (CCU), 805
 Chats, 594

- Checkland and Howell's model, 771
Child sexual abuse, live-streaming, *see* Live-streaming of child sexual abuse
China's official cybersecurity discourse
content analysis, 433, 435–437
critical discourse analysis, 434, 437–441
e-commerce market, 432
national and global contexts, 432
Church of scientology, 148–149
Ciphers, 701
Citizen games, 946
Citizen journalism, 377
Citizen's Band (CB), 387
Citizen science games, 946
CitySourced, 738
CL, *see* Corpus linguistics (CL)
Code-breaking, *see* Cryptanalysis
Cognata, 776
Collective intelligence
definition, 940–941
games (*see* Games)
Communicata, 776
Communication and internet studies (CIS), 297
Communication, policy development and trends, 900–904
Communication, rhetoric, and digital media program, 299
Communications Act 2003, 904
Communicative action, 919
Communicative capitalism, 916, 919, 931
Community building, 612, 615, 616, 620
Community-making practices, 170
Community of practice (CoP), 823–824
Community organizing, 617, 619
Computational social science, 808
Computer-mediated communication (CMC), 168, 382, 386, 388, 510, 515–516, 803
aim of knowledge, 513
behaviorist interactionism, 513
contingency theory, 514
discourses (*see* Internet discourse)
media choice theories, 514
media richness theory, 514
methodology, 514
methods, 514–515
origins, 512
phenomenological interactionism, 513
social influence model, 514
social presence theory, 514
symbolic interactionism, 512
Computer-mediated interaction, 533
Confidentiality, 574
Consensus democracy, 471, 474
Consent, 420–423
Conservative Party, 611, 612, 614–615, 621
Constitutive surveillance
digital era, 1016–1017
Foucauldian framework, 1015–1016
surveillant assemblage, 1014–1015
Contact Creator System, 613, 616
Content consumer, 372
Content production, 372
Content sharing services, 802
Context-aware experience sampling (CAES), 1035, 1037
Contingency theory, 514
Continuous City website, 740
Convergence, 894
communication industries and net neutrality, 894, 897
implications of, 897–900
Cooperative contribution games, 949
Corbyn, Jeremy, 613, 615, 619–621
Corpus-assisted discourse studies (CADS), 599
Corpus linguistics (CL), 593
cognitive and social aspects, 595
features, 596
frequency analysis, 597
frequency measures, 599
machine learning, 598
in mixed approach, 599
tasks, 597
tokenization and unification, 598
Weberian differentiation, 597
Crimes, 206, 213, 217–220
Critical internet studies, 264
commodifications and sub/national interests, 276
foundation of, 277
popularity, 272
problems of, 272–273
responsibilities, 273–277
Critical mapping, 481
Critical theory, 268
Critical work, 268, 270
Cross-disciplinary methodology
benefits of, 50
recontextualization through, 57
Crowdsourcing
definition, 938–940
games (*see* Games)
Crowdsourcing platforms, 851
Cryptanalysis, 696

- Cryptographic media
 codes, 698–700
 encryption, 694
 epistemology, 702
 epistolary practice, 693
 language, 701
 obfuscation and hiding, 696
 privacy-enhancing technologies, 692
- Cryptology, 695, 696
- Cultural rhetorics, 983
- Custom callback URL, 810
- Cyberfeminism, 920–921
- Cyberinfrastructure
 description, 352
 interviewing protocols, 357–360
 methodology, 353–354
 participants in, 352
 and science on internet, 5
 telephone interviewing (*see* Telephone interviewing)
 TeraGrid, 356–357
 XSEDE, 357
- Cybernetic media theory
 definition, 881
 “transmission model” of communication, 881
- D**
- Daily life studies
 conventional sampling methods for, 1035–1037
 ethical and privacy concerns, 1044
 FoM10, 1042, 1044
 mobile technology, 1037
- Data, culture and society, 292–293
- Database, 610, 613, 615
- Data-driven, networked urbanism, 730
- Data ethics, 768
- Day Reconstruction Method (DRM), 1036–1038, 1040
- DDoS, *see* Distributed denial of service (DDoS)
- Decentralization/decentralize, 610, 619, 620
- Declaration of the Rights of Man and the Citizen of 1789, 658
- Decolonialism, 988
- Democratization/democratize, 610, 612, 616
- Dialogical relationship, 578
- Diary method, 1036
- Diffusion of innovations, 522
- Digital activism
 hacktivism, 476–477
 post-Fordism critique, 471–474
 tactical media (*see* Tactical media)
- Digital and social media, 195
- Digital conversations, 595
- Digital culture, 294
- Digital disability, 415–418
- Digital disease detection (DDD), 849
- Digital divide, 787
- Digital folklore
 Barbara Kirschenblatt-Gimblett
 analysis, 170
 e-mail chains, 168
 folk art, 176–178
 internet, 172–174
 jokes and jargons, 169–171
 memes and memetics, 178–180
 playfulness, 171
 users, 176–178
 vernacular creativity, 174–176
- Digital humanities, 67
- Digital inscription, 530
- Digitalisation of Islam, 793
- Digital management, 287
- Digital media, 289
 astroturfing, 715
 big data studies (*see* Big data studies, digital media)
 cloaked websites, 715
 deception, 714
 disinformation, 713
 vertical *vs.* horizontal propaganda, 715
- Digital society, 288
- Digital technologies and policy MPA, 289
- Digital technology, 189
- DIKW pyramid, 770
- Diploma in digital communication for organizations, 301
- Direct action, 150, 151, 153, 157
- Disability
 digital, 415–418
 and privacy, 418–419
- Discourse
 China’s official cybersecurity (*see* China’s official cybersecurity discourse) in CL (*see* Corpus linguistics (CL))
 CMC, 593
 definitions, 592
 in multimodal communication, 600–604
- Discourse cycle, 825
 definition, 825
 discourses in place, 826–827
 historical body, 825–826
 interaction order, 826
- Discourse studies, 819–820
 discourse cycle, 824–827

- Disguised propaganda
analytical strategy, 718
definition, 711
digital media, 713–716
forms of, 712
grey and black propaganda, 712
impersonated propaganda, 712–713
key role in psychological warfare, 713
large-scale organizations, 718–719
obfuscated forms, 711–713
social media platforms, 716–717, 719–721
- Distributed denial of service (DDoS), 149
attack, 150, 477–479
- Distributed-human intelligence tasking
approach, 948
- Distributed responsibility, 838
- Diversity, 396–398
Canadian Armed Forces, 400–408
in military organization, 398–399
- Doxing, 160
- E**
- EBT, *see* Emotional Broadcaster Theory (EBT)
- E-commerce, 438
- Economic surveillance
Foucauldian critical theory, 1019
information capitalism, 1018
Onavo data, 1020
Tinder’s monetization, 1019
virtual reality technology, 1020–1021
Zuboff’s framework, 1019
- Electronic disturbance theatre (EDT), 150
- Electronic frontier foundation (EFF), 162
- Electronic ticketing, 728
- Elpack system, 615
- Emotional Broadcaster Theory (EBT), 538
- Emotional habitus, 924
- Emotional public protests, 539–541
- Emotions on Internet
affective dimension, 532–534
affective technology, 530
anthropomorphization, 534
dating and romantic websites, 535
emotional public protests, 540
news sharing, 537–538
sentiment analysis, 534
social networking sites, 536–537
virality, 538–539
- Empathy, 579
- Encryption, 694–696
- Endpoint technologies, 264
- Engagement games, 946
- Enspiral Network*, 739
- Epistemology, 701–703
- Ethereum, 630
- Ethical behavior, 573
- Ethical decision-making, 574
- Ethics, 671, 674, 675, 682–685, 687, 768, 771, 772, 774, 776, 778, 782
- Ethics of practice, *see* Situational ethics
- 2002 EU Electronic Communications
framework, 903
- European Convention for the Protection of
Human Rights and Fundamental
Freedom, 652
- Excalibur, 622
- Experience sampling method (ESM), 1036, 1038, 1040, 1042
- Experimental publishing master program, 291
- Extant criticism, 574
- Extensible Messaging and Presence Protocol
(XMPP), 390
- F**
- Facebook, 111, 112, 115, 539, 692, 802, 804, 806, 807, 958, 960, 964, 966, 968, 973, 1034
group, 376
as theatre, oligopticon and panorama, 121–122
- Face-to-face relationships (F2F), 533
- Fake news, 719
- FBI informant, 154
- Feminist ethics, 575
- Feminized digital sociality and online
philanthropy
affective labor, 231–233
borrower profiles and lender responses, 233–236
consumer labor, 226
digital housewives, 230
hiring practices and incentive, lack of diversity in, 226
infrastructural coded features, 226
Internet/digital as a potentially global socio-political space, 229
- Internet mediation and production, 231
- kiva.org, 230, 235
- productive labor, 228
- reproductive labor, 228
- service labor, 227
- social durability, 227
- social relations, 228
- social transformations, 228

- Feminized digital sociality and online philanthropy (*cont.*)
 technological interfaces and gadgets, 226
 temporal scalability, 227
- F-Fatwas*, 792
- Field theory
 critiques, 449–450
 definition, 448–449
- Film industry, big data, *see* Big data, in Hollywood film industry
- FinFisher, 157
- Finnish media organizations, 499
- Fix-o-gram app, 738
- Flannery, Matt, 231
- Flash software, 494
- Folk art, 176–178
- FoM10, 1042, 1044, 1045
- Foundations of internet research, 5–6
- Fox news report, 148
- Free/Libre “Open Source” (FLOSS) software movement, 890
- Free and Open Source Software (FOSS), 872
- G**
- Games, 942
 adaptive-predictive, 950
 algorithm construction, 950
 analysis distribution, 950
 ARTigo, 951
 broadcast-search approach, 945
 as collective problem-solving spaces, 942
 cooperative contribution, 949
 data analysis, 944
 distributed-human intelligence tasking approach, 948
 and emerging media program, 281
 flaws, biases, and values, 943
 knowledge-discovery and knowledge-management approach, 945
 as leisure, 944
 Nanocrafter, 951–952
 peer-vetted creative-production approach, 947–948
 players, 944
 types of, 944–945
 GameSurge, 389
- Games with a purpose (GWAP), 946
- Geographic information systems (GIS), 30, 31, 36, 38, 728
- Geo-marketing, 613, 614
- Geoweb, 31, 42, 43
- Get out the vote (GOTV), 614, 618
- Gibson, J.J., 340
- GIS, *see* Geographic information systems (GIS)
- Global market capitalism, 232
- Global net neutrality policies, 894
- Global Positioning System (GPS), 31, 33, 35
- “Global Twitter Heartbeat” project, 76
- GoFundMe page, 929
- GOTV, *see* Get out the vote (GOTV)
- Gould’s analysis, 924
- Governance, 439, 440
- Grassroots democracy, 622
- Grey propaganda, 712
- Ground campaign, 610, 611, 616, 621, 622
- Grounded theory method (GTM), 401
- Group privacy, 840
- H**
- Habermasian inspired approaches, 518
- Hacked HBGary servers, 153
- Hackers, 152, 154, 156, 158, 160, 164
- Hacking, 152
- Hacking team, 157
- Hacks, 384
- Hacktivism
 contemporary capitalism, 476
 information capitalism, 476
- Hacktivist groups, 478
- Hacktivist tactical media, *see* Distributed denial of service (DDoS)
- High Performance Computing (HPC) services, 872
- Hijacking and reprogramming powerful network, 479
- Hjarvard’s theory of mediatization of religion, 754
- Hjelmslev’s sign model, 701
- Hollywood film industry, big data, *see* Big data, in Hollywood film industry
- Hootsuite*, 69
- Hoover’s theory of mediation of meaning, 753
- Horizontal propaganda, 710
- Hotelling effect, 735
- Human computation games, 946
- Human-computer interaction (HCI), 510, 519
 aim of knowledge, 516
 assumptions, 516–517
 methodology, 519
 methods, 519
 origins, 516
 SDT, 518

- social and organizational theories, 518
TAM, 517
Hutchby, I., 340, 341
Hybridity, 376
- I**
- Identity, 1000
analytical identity and difference, 1002–1005
political identity and difference, 1000–1002
Identity-based deception, 712
Identity politics, 920
Idle No More's online activities, 191, 193
digital technologies, 186
Imagined affordances, 342
iMuslims, 790
Indigenous communities, 195
Individualism
internet revolution, 252
mass self-communication, 252
mobile revolution, 252
psychological relationships, 254
social network revolution, 252
social operating system, 252
social relationships, 253, 254
Infinitesimal identity and difference, 1005–1006
Informationalism, 250
Information and communication technologies
(ICTs), 204, 206, 212, 218, 507, 510, 969, 972, 1035
usage, 1034
Information and knowledge society doctoral programme, 295
Information capitalism, 471, 476
Information science, 296
Information studies, 301
Information systems, 997
Informed consent, 574, 842
Innovation games, 947
Instagram, 804, 806, 808, 809, 823, 1034
Instant messaging (IM), 382–383, 389
Institutional Review Boards (IRB), 847–848
Integrated digital media (IDM) program, 283–284
Interactive journalism, 377
Internal Revenue Service (IRS), 630, 641–642
International Covenant on Civil and Political Rights, 652
Internet, 432, 433, 437, 438, 440, 894, 897, 899, 901, 904, 906, 907, 909
CADS, 599, 600
and emotions (see Emotions on internet)
feature of, 601
genres, 594
interactions, 600, 602
multimodal ensemble, 602
open Internet, 908
potential of, 897
protocols, 895
significance of, 894, 908
texting and digital literacy, 601
Internet ‘access’-ability
basic digital skills, 650, 651
domestic implementations, 654–655
international obligations, 652–654
judicial considerations, 655–660
policy suggestions, 662–664
USOs, 660–662
Internet access providers (IAP), 894, 899, 900, 907, 909
Internet art
art world, 134
historical progression, 135
identity, 139–141
mass media, 135
mediation, 138–139
Trecartin's characters, 140
social media, 132
spatiotemporality, 141–142
Web 2.0, 131
The Wrong Biennale, 135
Internet culture, 134
Internet discourse, 592, 599, 602
Internet folklore, 172–174
Internet Freedom Provision, 653
Internet of Things, 542
Internet project and research, 300
Internet relay chat (IRC) server, 150, 383, 388
Internet research, 980, 983
Internet research ethics, 837–839
Internet studies, 30, 32, 34–36, 264, 726, 728, 729, 959
big social data approaches (see Big social data approaches)
nexus analysis (see Nexus analysis (NA))
research programs in (see Research programs)
Interpretative flexibility, 341
Intersectional feminism, 987
Intersectionality, 920, 925
Inventa, 776
IRC server, *see* Internet relay chat (IRC) server
Islam and internet research
Blogistan, 789
content analysis method, websites, 790
Dawa, 791

Islam and internet research (*cont.*)
 digital media, 789
 on digital platforms, 795
F-Fatwas, 792
 iMuslims, 790
 IslamOnline, 788
 neo-Islamism, 789
 proselytization, 792
 Qaradawi.net Quran, 790
 Quran and Hadith, scanned translations, 788
 Sharia-compliant halal social media
 platforms, 793
 Sufism, 794
 Ummah, 793

J

Jeremy Corbyn, 610
 John Searle's speech act theory, 997
 Joint International Doctoral Degree in
 Law, Science and Technology
 (LAST-JD), 296
 Jokes and jargons, 169–171
 Journal of Visualized Experiments (JoVE),
 9, 13

K

Knowledge games, 947

L

Labour Party, 610, 611
 Labour Supporters' Network, 617
 Laïcité, 756
 La Nuevede Anonymous, 159
 Lateral surveillance
 Foucauldian conception, 1025
 Fuchs' assessment, 1025
 symmetrical model, 1025
 Leadership party model, 619
 Learning, design and technology
 program, 299
 LGBTQ studies, 266
 Liberal Democrats, 614–616
 Lifecasting, 498
 Lifelogging, 1035, 1038, 1046, 1047, 1050
 diary method, 1036
 DRM, 1036
 ethical and privacy concerns, 1044–1049
 experience sampling method, 1036
 mobile technology, 1037–1039
 social media, 1039–1044

LINE/WhatsApp, 1034
 Live-streaming of child sexual abuse
 COE approach, 206–208
 EU approach, 208–209
 need for new legislation, 215–220
 sufficiency of existing instruments,
 212–214
 treatment in Italy, 209–210
 treatment in Sweden, 210–211
 treatment in US, 211
 UN approach, 204–206
 Local Loop Unbundling (LLU) regulation, 903
Loomio, 739
 Louisbourg, 497
 Lulzsec Peru and Phineas Fisher, 157
 Lurking, 846
 Lynch's theory, 754–755

M

Machine learning (ML), 598
 Mainstream media, 186, 188, 192,
 193, 195
 Aboriginal digital media headlines, 187
 and aboriginal media, 191, 193
 Bill C-45, impact of, 187
 in Canada, 188
 collective public opinion, 186
 indigenous communities, 189
 shaming and blaming discourses, 193
 Malbolge, 697
 Managing Elector Relationships through
 Local Information Networks (Merlin)
 system, 614
 Mapping project, 788
 Martinlutherking.org, 714
 Marx, Karl, 228
 Mass communication studies, 523–524
 aim of knowledge, 521
 assumptions, 521
 diffusion of innovations, 522
 methodology, 522–523
 methods, 523
 origins, 520
 UGT, 521
 Mass media
 characterization, 246
 digitalization, 247
 flexibility, 246
 global network services, 247
 hyperlinks, 246
 interactivity, 246
 mobility, 246

- vs. network media, 247
social network media, 248, 249
- Material culture, 168
- Media and communications, 297, 972
- Media archaeology, 886
- Media choice theories, 514
- Mediacy, 340
- Media logics
- functions, 369
 - hybrid media, 376–377
 - mediatization, 375
 - networked media (*see* Networked media logics)
 - politics, 370
 - social media, 370
 - societal institutions, 369
 - theory of, 370
 - traditional mass media, 376
- Media richness theory, 514
- Mediated discourse analysis (MDA), 818, 820
 - concept of practice in, 822
 - and conversation analysis, 818
 - theoretical background of, 819
 - validity of, 831
- Mediatization, 259, 375
- Megafone smartphone app, 417
- MegaUpload, 155
- Membersnet, 616
- Memes and memetics, 178–180
- Memex, 1038
- Merleau-Ponty, Maurice, 998
- Messaging application, 94
- Metcalf's Law, 108
- Methodology, nexus analysis, 827–831
- Methods, 671
 - big data (*see* Big data)
 - blended data (*see* Blended data)
 - digital, 672
- Micro-blogging, 377, 804
- Micro-targeting, 612, 614, 615, 622
- Miliband, David, 617
- Miliband, Ed, 610, 617
- Military-diplomatic framing, 435
- Millennium Development Goals (MDG), 653
- Million Women March, 923
- Mobile internet, 88, 90, 91, 96
- Mobile technology, 414, 416, 418
- Momentum, 613, 620, 621
- Morocco's Party of Justice and Development (PJD), 789
- Morse code, 698
- Motion Picture Association of America (MPAA), 551
- MouseTube, 9
- Multimodal communication
- discourse, 602
 - interactions, 602
 - multimodal ensemble, 602
 - nature of digital texts, 601
 - online interactions, 600
 - prototypical analysis, 603–604
 - social semiotics, 602
- Multimodality, 817
- Multi-stakeholder approach, 440
- Multi-User Dungeon (MUDs), 385
- My Experience (Me), 1037
- MyLifeBits, 1038
- N**
- Nagy, P., 342
- Nanocrafter, 952
- Nanoscience and technology (NST), 459
- Nation Builder, 616
- Neff, G., 342
- Neo-Islamism, 789
- Neoliberal feminism, 986
- Neoliberal individualism, 232
- Neothesus, 8
- Net.art
- community, 136
 - mailing lists and website, 130
 - protocols and aesthetics, 136
- Net neutrality policies
- basis of, 895
 - critical discourse analysis, 898
 - development and implementation of, 900
 - global, 894
 - US, UK and EU, specific cases of, 904–908
- Network
- bureaucracy, 244–246
 - individualism, 252–254
 - influence, 872
 - media, 246–249
 - mediatization, 259
 - neutrality, 661
 - neutrality, 661
 - society, 249–252
 - soft individualism, 254–256
 - spiral of silence, 256–259
 - structuralism, 243, 244
 - theory, 242, 244

- Networked media logics, 376
 distribution, 372–373
 production, 371–372
 usage, 373–374
- Networked publics, 532, 540
- Network society, 106, 113, 122, 123
 and social change, 918–920
- New Capitalism, 471, 481, 482, 485
- New Labour, 620, 621
- New media, 749, 758, 761
 new media communications, 290
 and religion (*see* Religion)
- Nexus analysis (NA), 816, 828
 CoP, 824
 as discourse analytic framework, 817–819
 discourse cycle (*see* Discourse cycle)
 MDA, 822
 mediated action and mediational means, 820–821
- NoP (*see* Nexus of practice (NoP))
 site of engagement, 821–822
- Nexus of practice (NoP), 822–823
 changing, 830–831
 data collection and typical data, 828–829
 navigating, 829–830
- O**
- Obfuscation and hiding, 696–698
- Occupy Oakland movement, 681
- Online and digital activism, 187, 189, 195
- Online chat, 390–391
 BITNET Relay, 386–388
 communication practice, 383
 definition, 382
 hacks, 384–385
 instant messaging, 382, 389
 IRC, 388–389
 MUDs and BBSs, 385–386
 platformization, 389–390
- Online communities
 analysis, 53–58
 Big Data-driven studies of, 58
 context of studies on, 50
 information about, 49
 interdisciplinary partnerships, 51
 social science research on, 50
- Online culture, 284
- Online field theory
 agency, 453–455
 boundaries, 455
 field structure, 456
 Web 1.0, 456–460
 Web 2.0, 464
- Online portals, 377
- Online social practices, 816, 817
- Ontology, 1003, 1006
- OpBart, *see* Operation BART (OpBart)
- Open Internet, 906, 908
- Open Systems Interconnection (OSI) model, 107
- Operation Antisec, 154
- Operation BART (OpBart), 154
- Operation Titstorm, 150
- Oppositional surveillance
 Foucauldian terms, 1028
 Hille Koskela definition, 1027
 sousveillance, 1026
- Oregon State University, 290
- Organizational reform, 610, 620, 622
- Over-the-top (OTT) services, 896, 909
- P**
- Participatory culture, 732
- Party members, 616, 618
 and activists, 613
- Peer-vetted creative-production approach, 947
- Personal Analytics Companion (PACO), 1037
- Person-to-person campaign, 615–618
- PETs, *see* Privacy-enhancing technologies (PETs)
- Philosophy, 998, 999, 1002, 1004
- Phineas Fisher, 157
- Phonebank, 612
- Pinch, T.J., 341
- Plain old telephone system (POTS), 693
- PLATO, 383, 386–387, 389
- POC women, 928
- Political identity and difference, 1000–1002
- Political surveillance
 biopolitics, 1022
 characteristic, 1022
 Fuchs' economic/political distinction, 1021
 governmentality, 1024
 Snowden files, 1023
- Politics, 761
- Popperian model of criticism, 267
- Post Express*, 930
- Post-internet art, 131, 134, 138
- PostNauka, 8
- POTS, *see* Plain old telephone system (POTS)
- Power feminists, 921
- Power law, 111
- Prediction, 553–557

- prediction of box office, 553–557
Pre-interactional gestures, 577
Privacy, 418–419
Privacy-enhancing technologies (PETs), 692
Privacy from Facebook, 1028
Procedural ethics, 575
Propaganda
 characteristics, 709
 definition, 709
 digital media, 710–711
 disguised (*see* Disguised propaganda)
 historical relationship, 708–709
 vertical and horizontal propaganda, 709–710
Public Information Act 2000, 654
Public Libraries Act, 655
Public sphere, 749–753
 and community, 135
PubMed, 21
- Q**
Qaradawi.net, 788
QuakeNet, 389
Qualitative interviewing, 354
- R**
Ramadan aperture, 792
Real-time passenger information (RTPI)
 systems, 728
Relational ethics, 575
Religion, 748
 Hjarvard's theory, 754
 Hoover's theory, 753–754
 Lynch's theory, 754
 in public life in Vietnam, 759–761
 religious sentiment after terrorist attacks in Paris, 756–759
 role in United States, 748
 secularization thesis, 750–753
 socio-political significance, 748
Remediation, 593
Research ethics, 420–425
 anonymity, 574
 avoiding harm, 570
 confidentiality, 574
 decision-making, 574
 ethics of care, 576
 ethical behavior, 573
 feminist ethics of care, 575
 informed consent, 574
micro-communicative steps, 577
procedural ethics, 575
relational ethics, 575
relationality, 576
SATORI Ethics assessment, 572
self-revelation, 576
situational ethics, 575
social media's affordances, 571
trust in mediated communication, 579
vulnerability, 572
vulnerability vs. sensitivity, 573
- Research programs, 511
CMC, 512–516
findings, 524–525
generalizability, 525
HCI, 516–519
levels of scientific work, 508
mass communication studies, 519–524
merits, 525
methodological level, 509
philosophical level, 509
technological convergences, 509
theoretical level, 509
validity, 525
- Rights, internet access, *see* Internet
 ‘access’-ability
- Robot journalism, 377
- RSA algorithm, 695
- S**
Sacred forms, 754–755
Sarbanes-Oxley Act of 2002 (SOX), 636
SATORI Ethics assessment, 572
Schutz, Alfred, 998
SCOT, *see* Social Construction of Technology (SCOT)
Second-order cybernetics
 access, agency, and participation, 888–892
 digital technologies, 883
 feedback system, 882
 pirate indoctrination, 887
 technical media, 884–886
Secularization thesis, 750
Securities and Exchange Commission (SEC), 630
Securitization, 432
Self-determination theory (SDT), 517–518
Self-revelation, 576
SenseCam, 1038
Sensitivity, 573
Sentiment analysis, 534

- Seoul Declaration for the Future of the Internet Economy 2008, 653
- Sexual exploitation of children, 203–204
- Simpson, Leanne, 192
- Situational ethics, 575
- Skype, 93, 96, 98
- Small world network, 111
- Smart city technologies, 735
- Smart contracts
- contract governance and distinctions, 633–635
 - description, 629
 - electronic contracting and secure distributed computing, 630
 - freedom of contract, 632
 - international impact on, 629
 - IRS case study, 641–642
 - recordkeeping principles and statutes, 635–637
 - statutes and regulation case study, 639–641
 - theories of evidence, 637–639
- Smartphone, 91
- SMNA, *see* Social media network analysis (SMNA)
- Snowden incident, 440
- Snowden revelation, 1013
- Social change, 249
- Social cognitive theory, 517
- Social Construction of Technology-perspective (SCOT), 803
- Social influence model, 514
- Social informatics, 298
- Social media, 131, 190, 247, 399, 550, 551, 555, 557, 563, 611, 612, 614, 621, 670, 674, 677, 679, 686, 959, 960, 966, 969, 971, 972
- affordances, 571
 - anonymization, 844–846
 - API data collection, 806
 - Big Data, 848
 - classical non-digital methods, 807
 - classification, 837
 - communications, 288
 - conceptual approach, 804
 - contextual markers, 807
 - crowdsourcing platforms, 851
 - data sharing, 851
 - definition, 837
 - digital footprints and traceability, 841–842
 - Facebook API, 809
 - generic method, 806
 - group privacy, 840
 - history, 382–384
 - importance for military organization, 399–400
 - informed consent, 842–844
 - Institutional Review Boards, 847
 - platforms, 372, 716, 719, 801
 - private, public, privacy, 839–840
 - research about children, 844
 - researchers in field, 846–847
 - SMNA (*see* Social media network analysis (SMNA))
 - SNS (*see* Social networking services (SNSs))
 - and social network sites, 838
 - storage of data, 850
 - technology, 1012
 - theoretical approach, 803–804
 - tools, 849–850
 - user-centric approach, 804
 - UserModel object, 810
 - users' latent communication, 804
 - web-based services, 802
- Social media network analysis (SMNA), 858, 874
- actors, agency and context, 862–865
 - critical analysis of, 859
 - history and concepts, 860–862
 - methods, tools and practices, 870–873
 - political economics, 867–868
 - rights, responsibilities and ethics, 865–867
 - sociological research, 868–870
- Social movements, 540, 670, 671, 674, 679, 680, 682, 684, 686
- Social movement organisations (SMOs), 453, 459, 460
- Social network affordances, 536
- Social network analysis (SNA), 106, 123, 446, 452–453, 860, 862, 874
- diffusion of innovations, 110
 - methods and approach of, 109
 - small world network, 111
 - strength of weak ties, 110
 - TouchGraph for Facebook, 112
- Social networking services (SNSs)
- actor-network theory, 118
 - Castells' Network Society, 113–117
 - development of, 106
 - emergence of, 106
 - global media events, 117
 - implications, 116
 - SNA, 111–113
- Social participation games, 947
- Social-political framing, 435
- Social positioning method (SPM), 1039
- Social presence theory, 514
- Social sciences, 958, 960, 963, 969, 974
- crossroads of, 53
 - researchers, 51–53

- Social technologies, 286
analytical identity and difference, 1002–1005
capitalism, 998
empirico-rational approaches, 999
infintesimal identity and difference, 1005–1006
political identity and difference, 1000–1002
social consequences, 999
- Sociogram, 109, 110
- Sociometrics, 109, 112, 858, 859
- SocioXensor, 1037
- Soft individualism, 254
- SoMe, *see* Social media
- SOPA, *see* Stop online piracy act (SOPA)
- Spaces of flows, 116–117
- Spatial analysis, 32
cshapes package, 38
and GIS methods, 31
and internet studies, 34
leafletR package, 38
OpenStreetMap and *osmar* packages, 38
raster package, 38
rgdal, 38
rworldmap package, 38
rworldxtra package, 38
spacetime, 38
spatial.tools package, 38
spatial statistics, methods in, 40–41
spatstat and *spatial* packages, 38
spdep, 38
sp for vector data, 38
- Spender, Dale, 230
- STEAM program, 283
- Steganography, 695
- Stiegler's notion of prosthetics, 918
- Stop online piracy act (SOPA), 155
- Strategic media development, 284
- Structuralism, 243, 244
- Suchman, Lucy, 997
- Sufism, 794
- Supporters, 611, 613, 615, 622
- Surveillance, 472, 474, 481
constitutive, 1014–1017
economic, 1018–1021
lateral, 1024–1026
oppositional, 1026–1028
political (*see* Political Surveillance)
- Survivance, 981–983
- Sustainable Development Goals (SDG), 653
- T**
- Tactical connectivity, 86, 96–99
- Tactical media
characteristics, 475
- consensus democracy, 474
- critical digital media, 474
- critical mapping, 481–483
- decentralized nature, 475
- definition, 474
- and hacktivism, 476–477
- hijacking and reprogramming powerful network, 479–481
- projects, 483
- systempunkt, 476
- transience, 483
- WikiLeaks, 484–485
- Talkomatic, 383, 386, 387
- Talk (program), 385
- Techno-feminist theory, 917
- Technology, *see* Social technologies
- Technology, Entertainment, Design (TED) conferences, 14–15
- Technology acceptance model (TAM), 517
- Telephone interviewing, 354
benefits, 355–356
lessons learnt about, 360–363
practical challenges, 354–355
- TeraGrid, 356
- Terms of service (ToS), 865
- Text conferencing, online synchronous,
see Online chat
- Third wave feminism, 920
- Tilburg University, 284
- Time axis manipulation, 917
- TinyMUD, 385
- TouchGraph, 112
- Transnational family, 87–90, 92, 96
- Trecartin, Ryan, 140
- Trump effect, 924–925
- Twitter, 33, 377, 396, 401, 402, 406, 408, 539, 683, 802, 804, 809, 958, 960, 964, 967, 972
data collection, 69
early research, 71
in global public communication, 70
hashtag studies, 71
overall network and communicative structure of, 68
role of, 70
- TCAT, 72
- Twapperkeeper, 69, 72
- Tweetdeck, 69
- Twitter API, 69, 71, 72, 74, 79
use of, 70
- yourTwapperkeeper, 72
- Twitter Capture and Analysis Toolset (TCAT), 72
- Twitter's Data Grants program, 676
- #TwitterEthics Manifesto, 683

U

- Ubiquitous computing, 85, 728
UneBougiePourParis, 758
 Uniform Electronic Transaction Act (UETA), 637
 Universal Declaration of Human Rights 1948, 652
 Universal Service Obligations (USOs), 649, 653, 660
 Urban imaginaries, 736
ActionStation, 739
CitySourced, 738
Continuous City, 740
 description, 737
Enspiral Network, 739
 Fix-o-gram app, 738
Loomio, 739
Story City, 740
 Urban informatics, 729–732
 UserModel object, 809
 Users's HTTP-session, 809
 User-to-document interaction, 510
 Uses and gratifications theory (UGT), 521–522
 USOs, *see* Universal Service Obligations (USOs)
 US Telecommunications Act, 903

V

- Vernacular creativity, 174–176
 Vertical propaganda, 709
 Video games, 56
 Virality, 538
 Virtual communities, 108
 Voter Activation Network (VAN) software, 614
 Voter ID, 616, 618
 VoteSource, 614
 Vulnerability
 categorizing minorities, 572
 offline, 572
 online, 572

W

- Wayback Machine, 496, 502
 Web 1.0, 456–457
 agency, 457–458
 analysis, 459–460
 environmental risk, 459

Web 2.0

- activist network, 460–462
 filter bubble, 462–464
 Web archives, social change
 access and analysis, 495–496
 archive selection for analysis, 492–495
 counting, 497
 macro- *vs.* micro-problem, 490
 pre-internet media organizations, 499–500
 web-specific phenomena, 498–499
 web spheres, 497–498
 Western neoliberalism, 988
 White feminism, 986
 White privilege, 926–927
 White propaganda, 712
 Whole Earth 'Lectronic Link (WELL), 229
 WikiLeaks threat, 153
 Wikipedia, 21, 958, 960, 966, 969, 973
 Women's March of 2017 on Washington, 922–924

X

- XSEDE, 357

Y

- Yes Men, 479
 YouKu, 15
 YouTube, 23, 811
 anti-vaccine videos, 21
 on cardiopulmonary resuscitation, 21, 22
 definition, 9–10
 Ebola virus disease epidemic on, 22
 human papillomavirus vaccination on, 20
 measles, mumps and rubella
 vaccination, 21
 prostate cancer information, 20
 pro-vaccine videos, 21
 and scholarly communication, 13–15
 science communication, 15–19
 statistics page, 8
 survey, 8
 theoretical and methodological challenges, 10–13
 vaccine-critical videos, 20