

DATA & METHODS

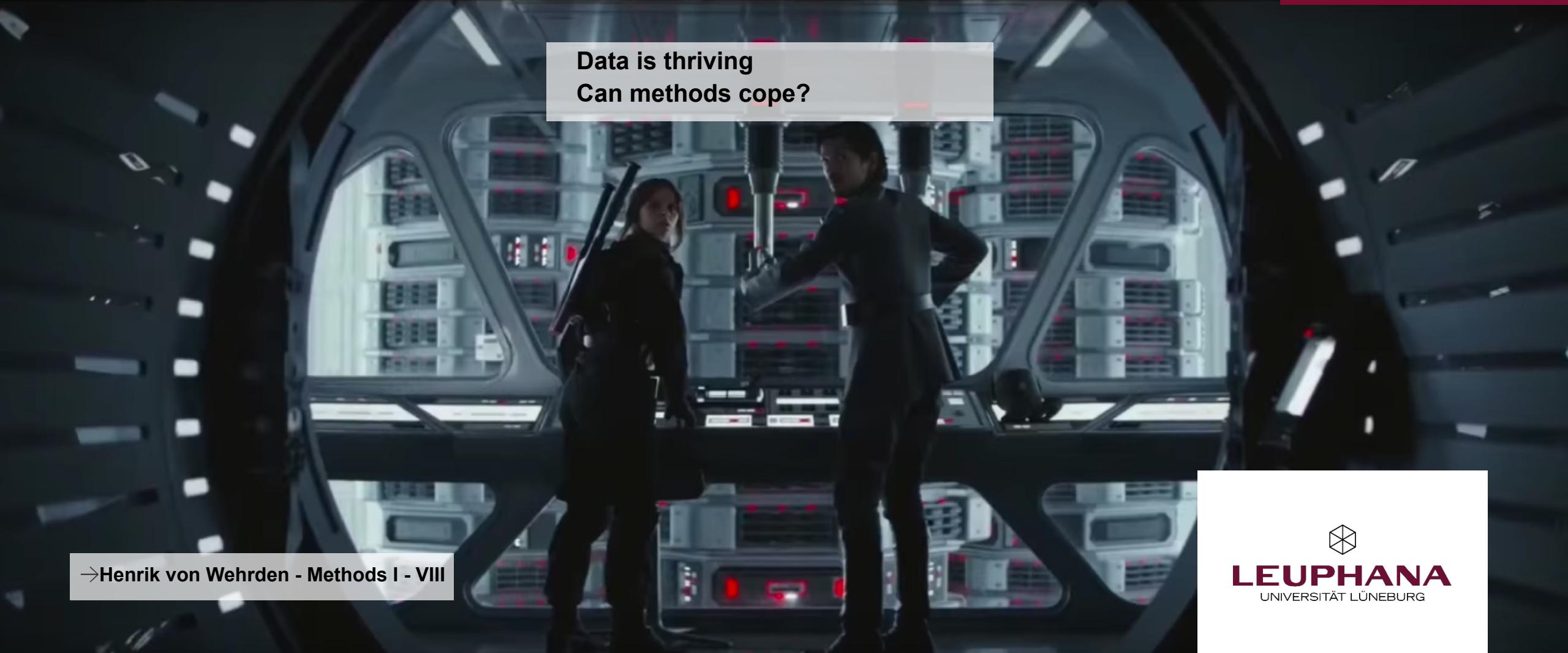
A tale of two things
that are strongly connected

→ **Henrik von Wehrden - Methods I - VIII**



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DATA & METHODS



Data is thriving
Can methods cope?

→Henrik von Wehrden - Methods I - VIII

A NEW AGE OF DATA IN THE INTERNET AND BEYOND

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Das verteilte digitale Bildarchiv
für Forschung & Lehre



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The image archive

prometheus is a digital image archive for Art History and many other image based disciplines. prometheus enables the convenient search for images on a common user interface within different image archives, variable databases from institutes, research facilities and museums.

prometheus doesn't draw profit and is supported by a non-profit association for promoting science and research through the development, appropriation and application of digital media in the arts and the field of the history of culture. License fees are charged exclusively for operating our services and the continuous development of our applications.

At a glance: Download our [prometheus Flyer!](#)

Tags

 **Searching – Search in multiple image databases within one surface**

Currently you are able to search in 108 art historian, design, architectural, theological, historian and archaeological and image databases with 2,696,928 images in total. The prometheus archive offers you a simple search that searches in all fields for your query terms or an advanced search that allows you to combine your search criteria in different ways or to pick certain databases for a more selective search.

 **Collecting – Assemble your topical images in one place**



A NEW AGE OF DATA IN THE INTERNET AND BEYOND

 **iDiv** German Centre for Integrative Biodiversity Research (iDiv)
Halle-Jena-Leipzig

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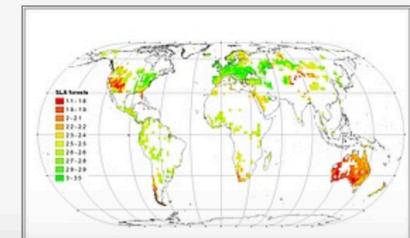
 **sPlot**

sPlot – The Global Vegetation Database

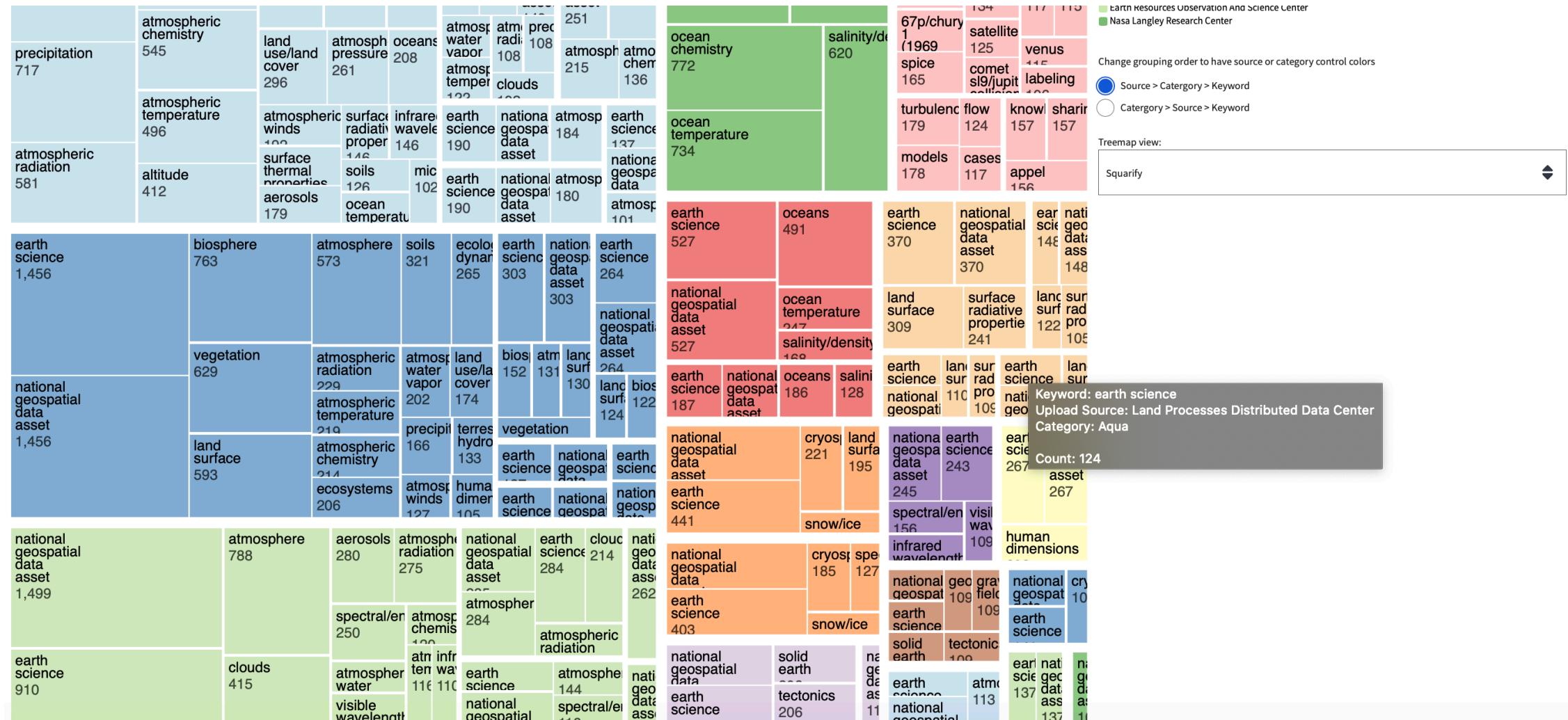
sPlot is the largest repository for plant community data in the world, containing more than 1 million records with full lists of plant species co-occurring in small areas (plots). The facility was first established as a working group funded by sDiv, then assumed as an iDiv research platform. By integrating national and continental vegetation databases, sPlot aims at understanding global patterns in plant diversity across facets, biomes and scales.

Research focus

- A big data infrastructure for collaborative biodiversity research.



A NEW AGE OF DATA IN THE INTERNET AND BEYOND



A NEW AGE OF DATA IN THE INTERNET AND BEYOND

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David Rumsey Map Collection
CARTOGRAPHY ASSOCIATES POWERED BY LUNA IMAGING

THE COLLECTION ♦ Share this Page

ticut.; Howe, Samuel Gridley; Ruggles, Daniel; New Haven, Connecticut; 1837;
Hudson River and Vicinity;

SILICON VALLEY
Silicon Valley; Hoburg, Maryanne Regal; 1982; Separate Map

Mars Marte; Hallwag AG; 19



ETHICAL CHALLENGES OF DATA

Categories	Ethical Challenges	Specific Examples	Values
Context sensitivity	Differentiating between commercial versus public health uses of data	Is identification permitted? Is consent required for DDD uses? If so, has consent been obtained? Can it be revoked?	Privacy and contextual integrity
	User agreements, terms of service, participatory epidemiology	Are users protected in all contexts irrespective of privacy laws that differ according to jurisdiction?	Transparency
	Global health issues	Are privately collected data open to global public health uses?	Global justice
Nexus of ethics and methodology	Robust methodology: algorithm validation, algorithm recalibration, noise filtering, and feedback mechanisms	False identification of outbreaks and inaccurate predictions of outbreak trajectory	Risk of harm
		Pressure to mobilize public health resources in light of rapidly spreading unvalidated predictions	Fair use of resources
	Data provenance	Awareness about public health uses of personal data (in aggregated form)	Trust, transparency, accountability
Legitimacy requirements	Best practice standards	Is there a shared code of practice amongst all those working on DDD?	Trustworthiness
	Monitoring bodies (policies for ongoing monitoring and action plans for correction of false results)	Is there a mechanism for quick response to inaccuracies about outbreaks?	Trust, transparency, accountability
	Paced integration of DDD to standard surveillance systems	Are there mechanisms for redressing harms caused by DDD activities?	Justice
	Communication to the public (prevent hype)	Management of expectations	Common good

doi:10.1371/journal.pcbi.1003904.t001



ETHICAL CHALLENGES OF DATA

Private customer data and identity should remain private: Privacy does not mean secrecy, as private data might need to be audited based on legal requirements, but that private data obtained from a person with their consent should not be exposed for use by other businesses or individuals with any traces to their identity.

Shared private information should be treated confidentially: Third party companies share sensitive data — medical, financial or locational — and need to have restrictions on whether and how that information can be shared further.

Customers should have a transparent view of how our data is being used or sold, and the ability to manage the flow of their private information across massive, third-party analytical systems.

Big Data should not interfere with human will: Big data analytics can moderate and even determine who we are before we make up our own minds. Companies need to begin to think about the kind of predictions and inferences that should be allowed and the ones that should not.

Big data should not institutionalize unfair biases like racism or sexism. Machine learning algorithms can absorb unconscious biases in a population and amplify them via training samples.



DIVERSITY OF DATA BECOMES AVAILABLE TO PEOPLE

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Open Source Initiative

Guaranteeing the 'our' in source...

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To promote and protect open source software and communities...

For over 20 years the Open Source Initiative (OSI) has worked to raise awareness and adoption of open source software, and build bridges between open source communities of practice. As a global non-profit, the OSI champions software freedom in society through education, collaboration, and infrastructure, stewarding the Open Source Definition (OSD), and preventing abuse of the ideals and ethos inherent to the open source movement.

Open source software is made by many people and distributed under an OSD-compliant license which grants all the rights to use, study, change, and share the software in modified and unmodified form. Software freedom is essential to enabling community development of open source software.



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We can neither confirm nor deny the existence of the information requested but, hypothetically, if such data were to exist, the subject matter would be classified, and could not be disclosed.



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Learn how the World Bank Group is helping countries with COVID-19 (coronavirus). [Find Out ➔](#) [×](#)

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World Bank Open Data

Free and open access to global development data

Search data e.g. GDP, population, Indonesia

Browse by [Country](#) or [Indicator](#)

MOST RECENT

What has been the impact of the pandemic on long-term growth prospects? [↗](#)
Franziska Ohnsorge, Naotaka Sugawara, Jan 08, 2021

What the pandemic means for government debt, in five charts [↗](#)
Peter Nagle, Naotaka Sugawara, Jan 11, 2021

WHAT YOU CAN LEARN WITH OPEN DATA

Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)



Year	Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)
2000	44
2001	42
2002	38
2003	35
2004	32
2005	29
2006	27
2007	25
2008	23
2009	21
2010	19
2011	18
2012	17
2013	16
2014	15
2015	14
2016	13
2017	12
2018	11
2019	8

WORLD

Atlas of Sustainable Development Goals
2020 From World Development Indicators



A NEW AGE OF DATA - THE QUALITATIVE REVOLUTION

Most data in the internet is qualitative

Most data is deeply normative

Data grows exponentially

More and more data is being digitalised

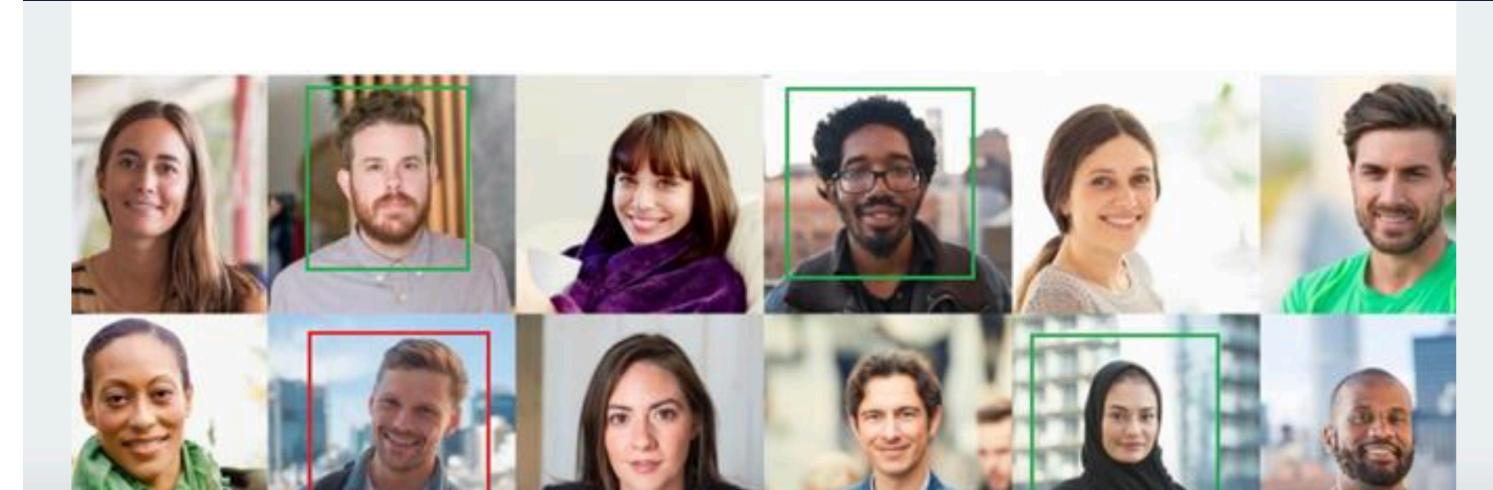
New data sources emerge

Potential of people to communicate increases



PICTURE RIGHTS

Facial recognition: top 7 trends (tech, vendors, markets, use cases and latest news)



<https://www.nytimes.com/2020/02/10/podcasts/the-daily/facial-recognition-surveillance.html>



NORMATIVE INTERPRETATIONS

Content analysis (Texts, paintings, etc)

Image classification (remote sensing, MRA and painting)

Focus discussions

Online questionnaires

Open interviews

Hermeneutics

Grounded theory



EXAMPLE OF ONLINE DATA



Abbildung 1: Pieter de Molijn: „Der Pferdekarren auf dem Dünenweg“, 1626, Öl auf Eichenholz, 26x36,5cm, Braunschweig, Herzog Anton Ulrich Museum



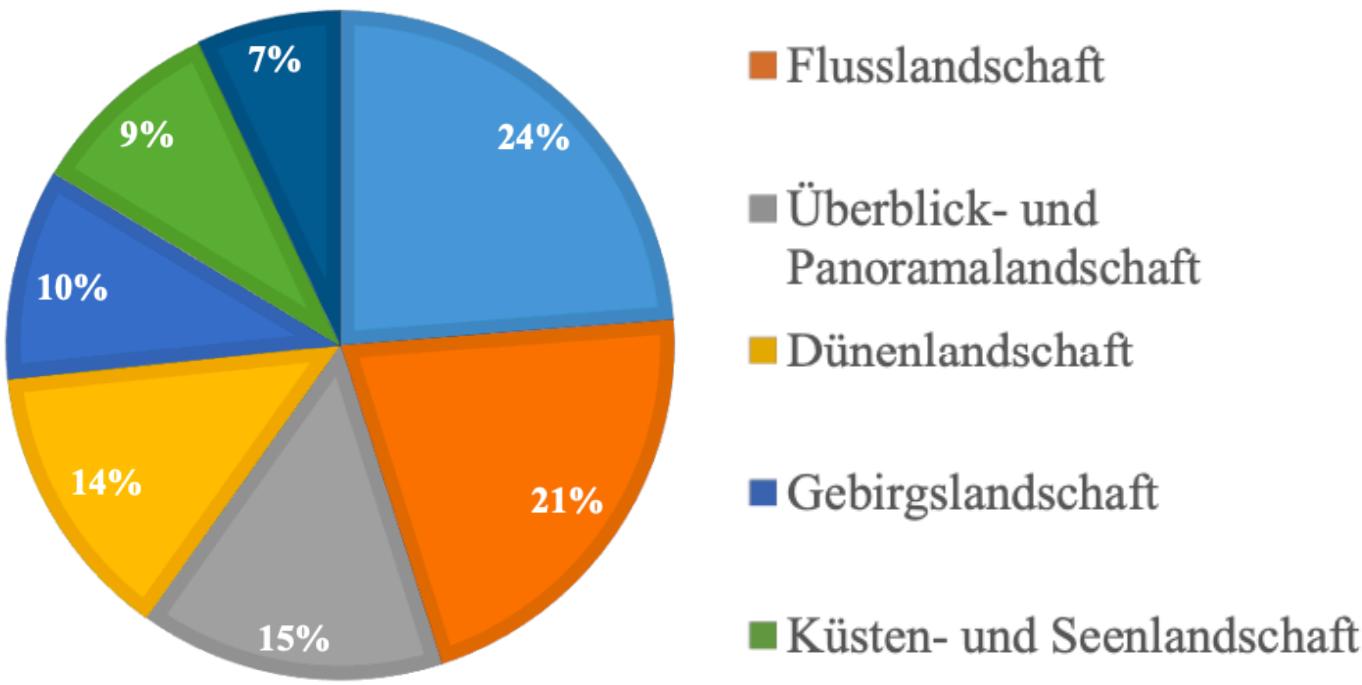
EXAMPLE OF ONLINE DATA



Abbildung 2: Screenshot aus Hyperimage mit Benennung der Indikatoren für Ökosystemdienstleistungen



EXAMPLE OF ONLINE DATA



Die Darstellung von Ökosystemdienstleistungen in der Malerei

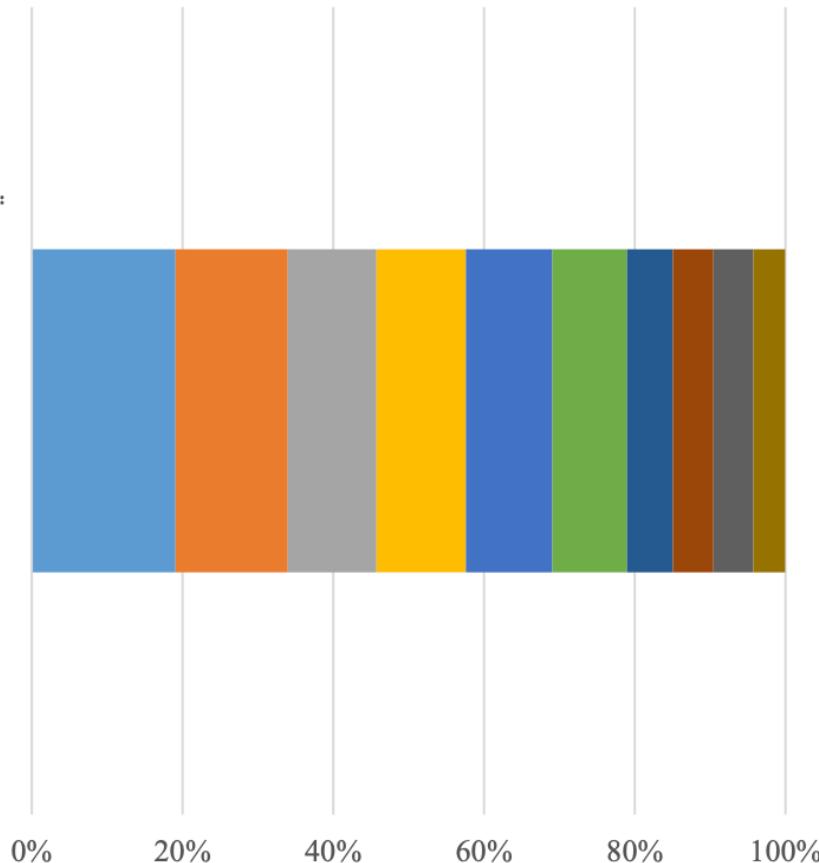
Eine exemplarische quantitative Analyse niederländischer Landschaftsgemälde der Frühen Neuzeit

*The representation of ecosystem services in paintings
An exemplary quantitative analysis of dutch landscape paintings of the early modern age*

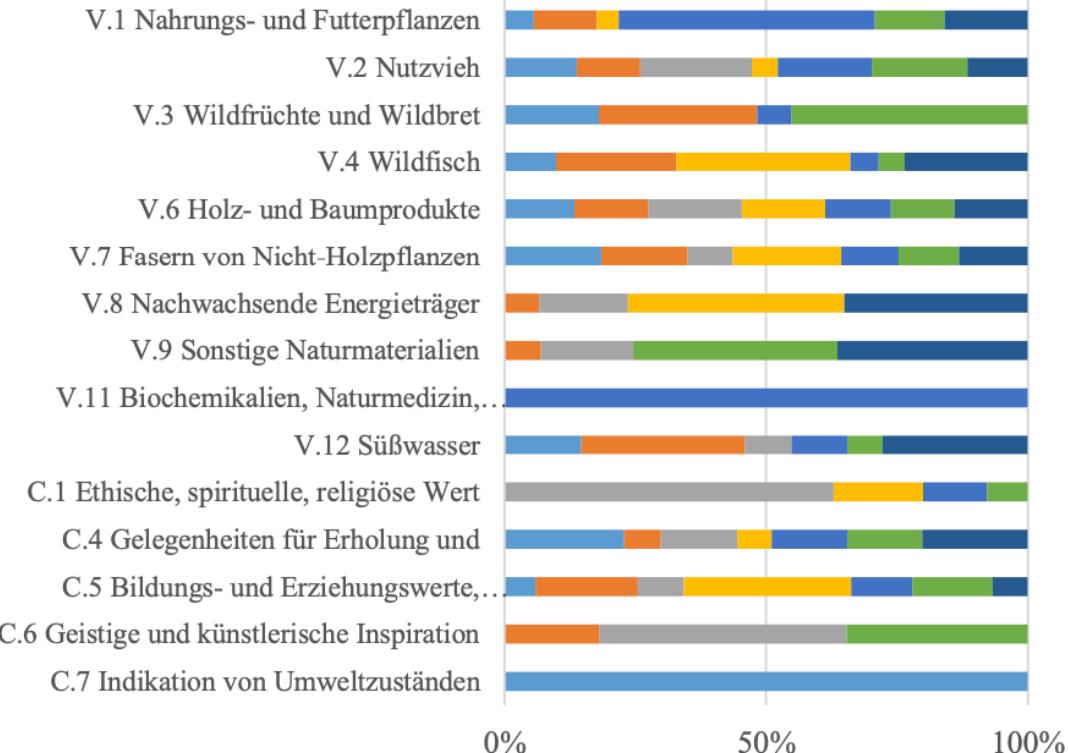


EXAMPLE OF ONLINE DATA

Überblick- und Panoramalandschaft



- 5.1.1 Gewässerläufe
- 2.4.2 Komplexe Parzellenstrukturen
- 3.2.4 Wald-Strauch-Übergangsstadien
- 2.3.1 Wiesen und Weiden
- 5.1.2 Wasserflächen
- 1.1 Städtisch geprägte Flächen
- 2.4. Landwirtschaftliche Flächen heterogener Struktur
- 3.3.1 Strände, Dünen, Sandflächen
- 3.1.1 Laubwälder
- 2.1 Ackerflächen



EXAMPLE OF ONLINE DATA

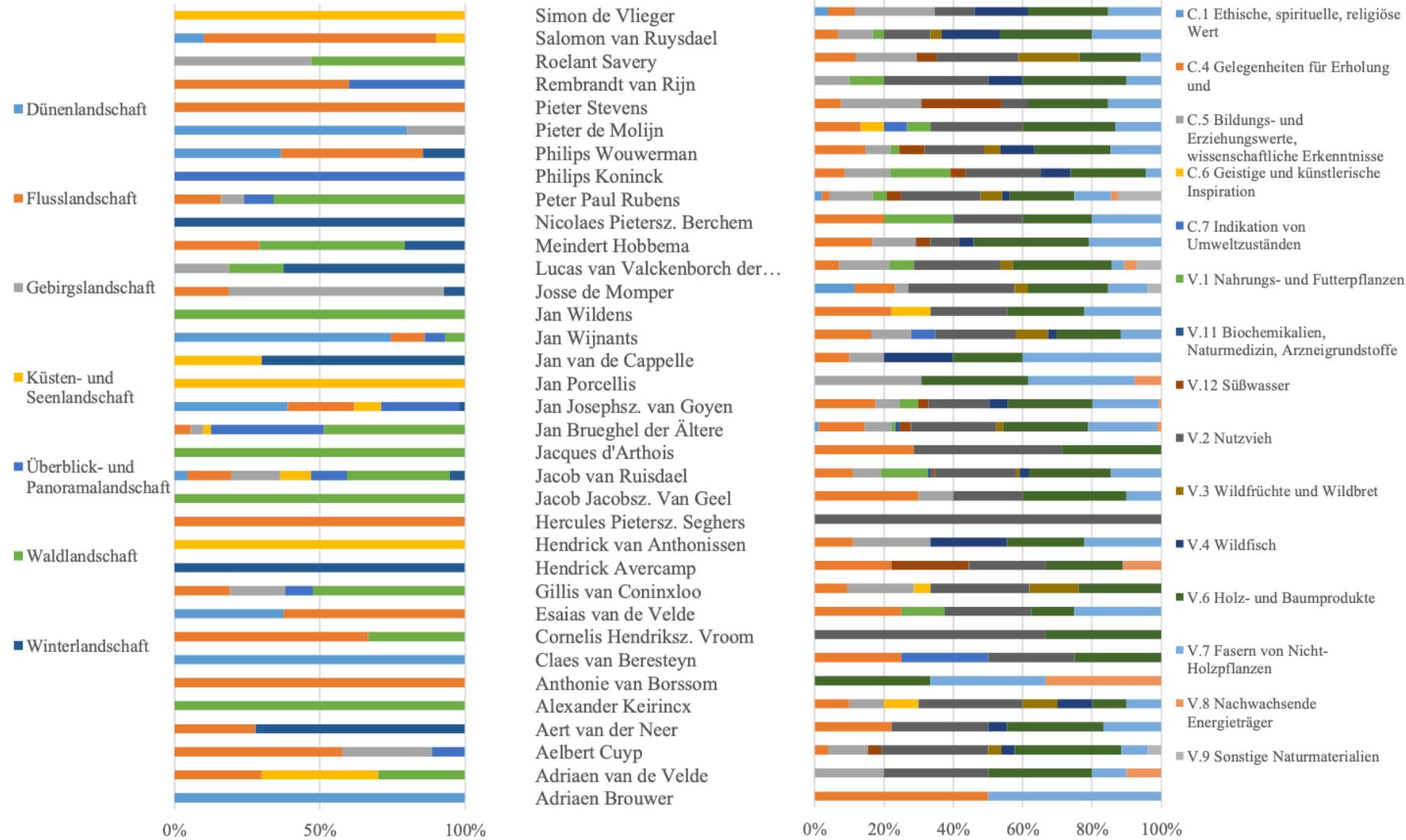


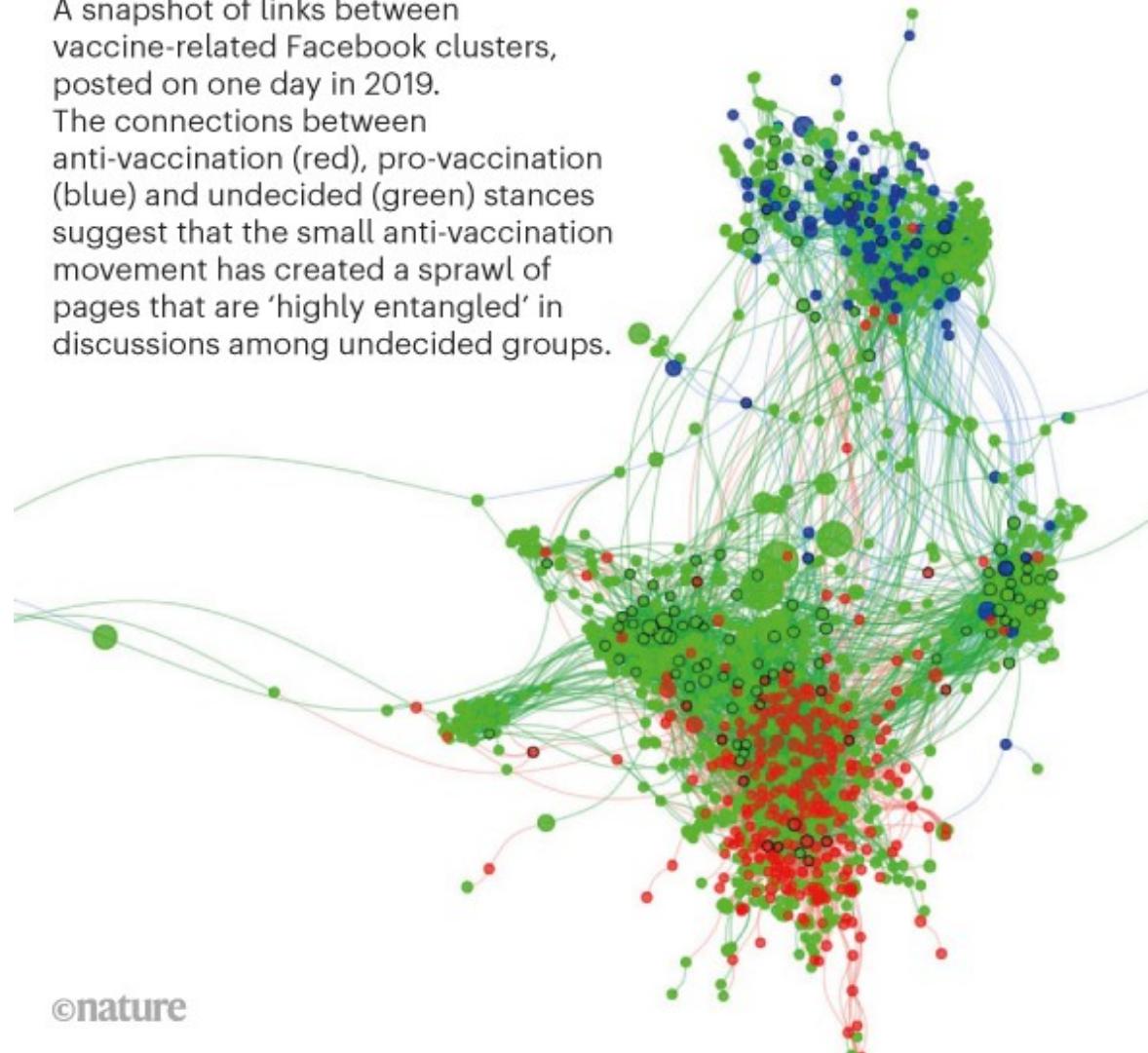
Abbildung 12: Landschaftstypen und Ökosystemdienstleistungen zugeordnet zum Maler (eigene Darstellung)



CULTURE WARS ALSO FUELLED BY DATA

ONLINE COMPETITION BETWEEN VACCINE VIEWS

A snapshot of links between vaccine-related Facebook clusters, posted on one day in 2019. The connections between anti-vaccination (red), pro-vaccination (blue) and undecided (green) stances suggest that the small anti-vaccination movement has created a sprawl of pages that are 'highly entangled' in discussions among undecided groups.



<https://www.nature.com/articles/d41586-020-01423-4>

[https://www.thelancet.com/journals/landig/
article/PIIS2589-7500\(20\)30227-2/fulltext](https://www.thelancet.com/journals/landig/article/PIIS2589-7500(20)30227-2/fulltext)



ORIGINS OF VARIABLES

Formatting of data

Logarithmic scale (Richter scale)

Temporal constancy

Constructed variables

The rise of the machines

Cultural and social diversity

Emergence of variables



HOW TECHNOLOGY CHANGED SCIENCE

E-Mail
Twitter
Presentations
etc.

Digital Media	New Media and Society	Science, Technology and Society	Big Data & Society	Annals of the History of Computing	Computational Culture
Business Administration / Entrepreneurship	Journal of Business Ethics	Business & Society	Business Strategy and the Environment	Academy of Management Journal	Journal of Management
	Academy of Management Review	Administrative Science Quarterly	Entrepreneurship Theory and Practice		Organization Science
Educational Sciences	Review of Educational Research	Journal of Educational Psychology	Learning and Instruction	Teaching and Teacher Education	Zeitschrift für Erziehungswissenschaft
Environmental & Sustainability Science	Sustainability Science	Journal of Cleaner Production		Nature Sustainability	Ecological Economics
Engineering	International Journal of Production Research	Production Planning & Control	IEEE Publications	Journal of Materials Processing Technology	CIRP Annuals Manufacturing Technology
Cultural Studies	Zeitschrift für Kulturwissenschaften	Zeitschrift für Medienwissenschaft	Zeitschrift für Kulturphilosophie as at Leuphana, Cultural Studies focuses on the philosophy of media		Zeitschrift für Kritische Theorie
	Theory, Culture and Society		New German Critique		Grey Room
Political Science	American Political Science Review	World Politics	Comparative Political Studies		West European Polits
Psychology	Psychological Bulletin	Journal of Applied Psychology	Journal of Experimental Social Psychology	Journal of Experimental Psychology: General	Journal of Personality and Social Psychology
Law	Neue Juristische Wochenztschrift	Juristenzeitung		Juristische Schulung	
Economics	American Economic Review	Econometrica	Journal of Political Economy	Quarterly Journal of Economics	Review of Economic Studies
Business Informatics	Business & Information Systems Engineering	AIS Basket of Eight	Proceedings ECIS	Proceedings WI	Proceedings ICIS



TECHNOLOGY CAN ONLY BE A MEANS TO AN END, BUT NOT AN END IN ITSELF

Interviews

Workshop settings

Citizen Science

Legal research

Serious gaming

Social network analysis

Systematic literature review



A WAY FORWARD FOR METHODS

Data ethics

Data storage

Data integration

Data translation

Data limitations

Keeping track of continuity



SUITABLE COMMUNICATION AND ADDITIONAL RESOURCES.

Indicate limitations of methods, e.g. data sources, constructedness
Increase qualitative methods amount and proportion
Diversify knowledge production
Novel facilitation of research
Science - society reconciliation



SUMMARY

- Many new data sources are currently emerging, unlocking new strata of knowledge
- However, with big data comes also big responsibility
- New data changed the way science interconnected
- Data is not knowledge
- Methodology needs to take all these changes into account
- How will science facilitate the increasing communication needed in the face of more and new data
- We cannot imagine how the world of data and the world of methods will look in 50 years



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Use Rocket chat!

