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DATA ACTIVISM AND SOCIAL CHANGE

Miren Gutiérrez



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Data Activism and Social Change

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To Valentina and Alessio

FOREWORD

In this book, Miren Gutiérrez portrays data activism and defends it as a way of democratic intervention in these times of big data. Few tasks are more relevant and necessary for academia and society today. The rigour of this work and the intellectual stature of the author encourage me to propose here some ideas that she and I have shared in recent years through our writings.

The collection, accumulation and analysis of massive data have become a critical strategic process for the development of economic and political activity. Today digital corporations have more resources than governments to understand social realities and public opinion. That is, the CEOs of technological businesses can comprehend better and earlier than political leaders the context, trends, behavioural patterns and parameters within which citizens' opinions circulate.

The consequence of this imbalance is evident, because companies do not share that information with governments for free. Therefore, public representatives and citizens lose autonomy vis-à-vis private powers. A paradigmatic example is that the value of the currency of any nation-state is at the mercy of the speculative operations dictated by the supercomputers of investment funds. The sovereignty of states and peoples depends, therefore, on their technological sovereignty.

Politicians and voters are now in the clutches of algorithms at the most critical moments of the social debate. The elections in which we choose leaders and the referenda in which we assign them certain

mandates have been the object of spurious control by actors with the resources and privileged access to new techniques of social manipulation.

Armies of bots have viralised messages in favour of the less-prepared candidates (e.g. Donald Trump for the US presidency) and the less sensible political options (e.g. Brexit). Embryonic public digital spheres have been deactivated as deliberation arenas and have been incapable of promoting inclusive consensus. Rather, they generate fracture and polarisation.

Digital (not social) networks favour echo chambers, designed to launch leaders and antagonistic messages. Algorithms develop and self-modify thanks to artificial intelligence to generate consumption niches.

Platforms and applications detect biometric, socioeconomic and psychosocial profiles. Then, they group users with the same ethnic characteristics, purchasing capacity and temperament, and combine these groups by transforming them into advertising or propaganda targets. They are defined by innumerable, expandable and repurposable features, updated in real time by the users themselves.

Digital companies carry out experiments of social manipulation, and market and opinion studies. And, deploying these techniques, the digital industry creates fictitious social realities, voting markets and parallel opinion climates, subject to constant turbulence. Despite their virtual nature, they provoke real effects.

Donald Trump's fake news, 'alternative facts' and unfounded assertions were transmitted by the Facebook News Feed as information only visible to users with certain profiles during the presidential campaign of 2016. Each group received different 'news', without having the ability to compare or share it with other groups.

The so-called digital communities do not work for the common good. They are herds of users who have become publicity workers and consumers because they put their contacts and personal communication channels at the service of corporations. They viralise the messages that further reinforce their biases. In this context, narcissistic self-promotion prevails, and advertising saturation ensues.

Self-absorbed users, moved by an always unsatisfied possessive individualism, accumulate reputation and attention. They invest in their personal brand in the absence of recognition for their competences. So job precariousness is supplemented with self-promotion and even digital arrogance. The credibility of the celebrities that govern us is the result of the attention that they accumulate monopolising the show.

If we understand the digital ecosystem like any other ecosystem (that is, as a trophic chain where one eats another), the truth and the collective interest are to be understood as the prey for the great predators. Evidence and rational arguments cannot compete in clicks with the viralised show orchestrated by the highest bidder. When digital visibility becomes political capital, a *pseudocracy* emerges, a government of lies (*pseudo* in Greek) sustained by our digital devices. Every time we turn them on, we feed Big Brother and become part of him: we bestow our data and become his confidants and publicists.

The digital corporations function as extractive data industries. They privatise knowledge, practices, social manifestations, innovation and public opinion. Collective intelligence and cooperation, dialogue and public expression become the private property of those who can monitor us and transform us into attractive consumers. Far from being free, we pay platforms and applications with our privacy. And we suffer the consequent loss of autonomy to act as full-fledged political and communicative subjects.

This simulacrum of government turns politics into a mere rhetorical exercise of storytelling. It seems urgent to propose a digital dietetics, a series of alternative practices and consumption that stops us from becoming propagandists of those who lie to us.

The internet has come to universalise and democratise the possibilities of participation in the social debate, potentially making it possible to control and put pressure on private and public powers. However, public goods—the communication infrastructure, research and analysis institutions—and common goods—knowledge, collaborative networks and shared communication resources—are being put at the service of private profit.

The commodification and monetarisation of our digital activity are not inherent or inevitable consequences of digital technology. However, they are the forced results of hegemonic technology, which is proprietary and opaque.

We face, above all, the collapse of the foundations of democracy. We alienate—place in *alien* hands—the creativity and social knowledge that we generate. We are part, permanently and gratis, of market studies and an auscultation of public opinion that eliminates digital anonymity. All the knowledge that we produce is used to promote conflict, instead of turning it into a collaborative, self-managed information flow with the consideration of a public good, safeguarded from private plunder and managed by public representatives to promote collective interests.

That is, precisely, the ideology that moves the activists that Miren Gutiérrez deals with in this book.

The aspiration that motivates these data activists is to share knowledge and inspire processes of social change and justice, uncovering and providing undisputable evidence for them. And they do it knowing that they are self-governing, full-fledged political actors with the freedom to establish communications and deploy collective action in indignation and intervention networks.

Madrid, Spain
December 2017

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PREFACE

The starting point of this book is an article in which Stefania Milan and I set the scene, link data activism to the tradition of citizens' media and lay out the fundamental questions surrounding this new phenomenon (Milan and Gutiérrez 2015). It was a point of departure for data activism as a concept, which we proposed as a heuristic tool to think about how people engage politically with the data infrastructure, the datafication process, and with corporate and government massive data collection.

This book brings into play my personal experience as an ecologist at Greenpeace Spain, which I headed for a while, and as a researcher at the Overseas Development Institute (ODI), where I currently explore negative environmental impacts on developing communities. While working on a big data-based project on illegal fishing in western Africa at ODI, I made sure we embedded the elements that I intuited a data activist initiative should have: strong alliances, robust data-based research, interactive cartography, lobbying, media reach work and an opportunistic launch. The interactive maps we created showed vessels performing illegal operations that had never been seen before. The impact was immediate: within days more than 150 media outlets—including *The Guardian*, *CNN*, *BBC* and *El País*—had covered the story; the United Nations Food and Agriculture Organization (FAO) felt compelled to release a statement supporting some of the recommendations of the campaign; Gambia banned all foreign operations in its waters; and Namibia signed the FAO's Agreement on Port State Measures to prevent illegal fishing, as the campaign was demanding. The prima facie evidence put forward

was compelling enough to start changing things and got me thinking about the potential of proactive data activism. The data for the project had been independently collected in spite of the curtain of secrecy that covers most fishing operations, agreements and joint ventures. Some of the datasets we used were *public*, which is not the same as *open*, but they were scattered around a plethora of registries, unstructured and hidden under layers of red tape. This fact made me reflect on how data activists get their data and on the taxonomies offered in this book.

As a data activist, another motivation behind this book is alleviating the lack of systematic analyses of data-based activism that can outline, elucidate and apprehend the novel alliances and strategies that make it possible, and the transformations that they are producing. I knew we were not alone in realising the potential of data for activism; but what could we learn from each other? And what did it mean for activism? Data activism is part of other trends in the fields of social action and communication practices (e.g. the open movement) and gets inspired by the hacker and journalistic ethos, among other influences. However, it was clear to me that data activism was a separate phenomenon, different from other modes of data usage or advocacy. Following Tom Boellstorff's enticement (2013), I started to think too about contributing to a 'big theory' by expanding the understanding of how data are employed by experts and non-experts in humanitarianism, activism and journalism.

I am grateful to many people for their critical inputs. First of all, I thank Pilar Rodríguez (University of Deusto) and Stefania Milan (University of Amsterdam) for their invaluable guidance and constant support. Thanks are also due to Guillermo Gutiérrez (Nafundi), who helped me with the data analysis; Xabier Barandiaran (University of Deusto) and Víctor Sampedro (King Juan Carlos University), who provided scholarly advice; and José Luis Orihuela (University of Navarra), who guided me at the beginning. I am thankful to my family, and especially to my parents, Arsenio Gutiérrez and Charo Almazor, who offered crucial support. I thank the Ushahidi Haiti Project deployers for their map, reproduced in this book.

I would like to recognise the people who generously offered time from their busy schedules and valuable insights in interviews, including, in alphabetical order, Luis Hernando Aguilar, Hisham Almiraat, Sergio Álvarez Leiva, Esteban Beltrán, Fernando Blat, David Cabo, Mar Cabra, Alberto Cairo, Jorge Carrión, Duncan Clark, Mariluz Congosto, Sandra Cucianelli, John D. H. Downing, Gustavo Faleiros, Aidy Halimanjaya,

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San Sebastián, Spain

Miren Gutiérrez

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CHAPTER 1

Mapping a Better World: A Journey

Abstract This introduction presents data activism as new social practices rooted in technology, which take a critical view towards datafication and use it politically for meaning-making, coordination and change. It offers a conceptual toolkit, including definitions of big data in light of activism. It contains a ‘route map’ explaining the book’s structure, with presentations of Chapter 2, dedicated to the social uses of the data infrastructure; Chapter 3, tackling proactive data activism from different angles and providing taxonomies of activists; Chapter 4, focused on the case study; and Chapter 5, offering brief conclusions. The Ushahidi platform illustrates how organisations use the data infrastructure to understand complexity and generate solutions. A methodological note clarifies how empirical and participant observation, qualitative interviewing and the case study are employed.

Keywords Datafication · Big data · Activism · Surveillance
Data infrastructure · Methodology

Upset by the absence of mainstream media coverage of Kenya’s post-election violence of 2008—in which almost a thousand people died in attacks on different ethnic communities—Ory Okolloh and three other tech-savvy activists called Erik Hersman, Juliana Rotich and David Kobia set up a platform, which they named ‘Ushahidi’ (‘testimony’ in Swahili),

to visualise the dead and plot the violence reported via email and text message by surviving victims and relatives on a Google Maps chart (Keim 2012).

They decided not to build a tool from scratch, but to combine the capacities of mobile phones, databases, email systems and online cartography to develop the website quickly (Keim 2012; Adewumi 2008). In the next few months, others joined into establish a mechanism to verify eyewitness testimonies comparing them with media reports and sources from non-governmental organisations (NGOs), aid groups and governments, to avoid spreading false information (Smith 2008). Patrick Meier became Ushahidi's Director of Crisis Mapping.¹ By 2009, the Ushahidi platform had been used to monitor elections in Kenya, India and Mexico, and to track medical supply shortages in Malawi and Zambia (Bernholz et al. 2010). And in 2010, the Ushahidi Haiti map would revolutionise the traditional way in which emergencies, disasters and conflicts are tackled (*ibid.*), giving birth to digital humanitarianism.

Paraphrasing Ian C. Jarvie and Ulrich Beck (2015, 2017), these initial deployments of the Ushahidi platform illustrate people's search for mapping systems that can help navigate a metamorphosing world. This book focuses precisely on novel social practices enabled by technology and data, which take a critical approach towards datafication and use it politically and proactively for meaning-making, coordination, participation and social change, for which Milan and I have coined 'proactive data activism' (2015, 125). Ushahidi's crowdsourcing platform—which combines data and communication infrastructures and the geoweb, or geographic, geospatial and geotag overlay systems (Scharl and Tochtermann 2007)—is globally used to make sense of complex, ongoing crises and support the relief efforts. Some deployments of the Ushahidi platform are employed in this study as pivotal cases to illuminate how proactive data activism works in real life.

This study represents a contribution to our understanding of the interplay between data, technology and communicative practices on the one hand, and democratic participation on the other. It addresses the emergence of proactive data activism, which consists in ways of collaborating, organising and taking action via software and data, seeking to create unconventional narratives and solutions to social problems.

¹ Meier no longer works for Ushahidi.

By becoming involved in these activities, proactive data activists bypass deadlocks and top-down approaches to social challenges; they correct asymmetries and empower individuals and groups to communicate, collaborate and participate in decision-making processes.

In this chapter, I offer a conceptual toolkit to explore proactive data activism, which sits at the junction of other social uses of data (e.g. data journalism), other change-promoting activities (e.g. transnational activism) and other applications of the data infrastructure (e.g. the employment of the internet of things, IoT, in architecture). Thus, the approach of this study is multidisciplinary.

Here I look into big data in light of activism, and activism in light of big data, as well as the challenges and opportunities that the data infrastructure poses. Other notions are developed as the book progresses. These concepts derive from critical thought, international relations studies, journalism research, alternative and citizens' media studies, critical cartography, and social movement and communication theory. Nevertheless, this is not a literature review; I draw from the empirical observations of 40 cases and dozens of interviews with practitioners, researchers, data activists and journalists, who spoke to me about their work and whose words I invoke whenever suitable.

Next, in this introduction a chart is offered to navigate the rest of the book, detailing the contents of the chapters and the analytical thread linking them, followed by a brief note on the methodology that sustains the analysis for this book.

Some words of caution are in order. What follows is neither an exhaustive account of existing data activist initiatives nor a normative classification of cases. I am biased by the languages I speak, the experience I have and the interests I pursue, so the voices included here come mostly from Europe, America and Africa to the detriment of other regions, and focus on issues such as human rights, humanitarianism, climate change and the environment. What I offer is an analysis of real-life cases and a taxonomy that can be applied to other situations not included in this study.

Finally, the do-goodism of the projects inspected here does not compel me to turn a blind eye to the contradictions that surround real-life cases. Lessons learnt are offered as a way of building a model for activism that can deal realistically with the challenges of the big data society. I am not enthralled by an individual tool or initiative either. The Ushahidi platform (experiencing a leadership crisis at the time of

writing) is no longer the grassroots endeavour that it was when it started. Artefacts are not cure-alls without people, transparency, collaboration and engagement.

A TOOLKIT FOR DATA ACTIVISM: SETTING THE SCENE

Big Data in Light of Data Activism

Data activism is activism that utilises the data infrastructure as an enabling method. Definitions of big data are not unproblematic.

Big data can be facts, signals or symbols; that is, modifiable, distributed and interactive artefacts. Big data could be defined as a profusion of digital objects; user-generated online content; data resulting from datafication, or the ability to transform into data aspects of the world ‘that have never been quantified before’ (e.g. friendships in the form of *likes*); data generated by the IoT; signals captured and emitted by sensors, drones and portable devices; online traces left behind by web click-streams and indexing processes; and metadata gained by the ‘snooping’ machinery, which are so large, can be processed with such velocity, are so varied, have so much potential when rendered useful and show so much accuracy and complexity that they can be considered *big* and, therefore, can only be managed using a new infrastructure (Kallinikos et al. 2013; Mayer-Schönberger and Cukier 2013, 5; International Telecommunication Union 2014). The data infrastructure is to be understood as a digital organisation that enables data sharing, management, storage, analysis and usage, which can include software and the platforms that allow the transfer and employment of data (Russom 2013, 4–20).

Big data analysis can produce new insights, new knowledge and new value (Lazer et al. 2009; Lohr 2012). The ability to generate and take in ever larger amounts of data has driven Joseph M. Hellerstein to speak of ‘the industrial revolution of data’ (2008).

The relevance of metadata became apparent in 2013, when Edward Snowden, a US computer analyst formerly at the Central Intelligence Agency (CIA), provided several media outlets with top-secret National Security Agency (NSA) documents, leading to exposés about massive surveillance of the phone and internet communications of ordinary people. According to Snowden’s revelations, the NSA requested metadata about millions of phone calls from Verizon, without informing its clients (Greenwald 2013). Thomas Poell, Helen Kennedy and José van Dijck

label this practice *dataveillance* (2015). Despite being as ‘cooked’ as data (Boellstorff 2013), metadata—understood as *data about data*—are more sensitive than data because they are subject to less protection (Mayer et al. 2016, 1).

Big data-based monitoring represents a convergence of business and political interests. National security is a business goal, and there is a revolving door between the two in the world of surveillance practices (Bauman and Lyon 2013, 9). The collection of private data and metadata by governments and companies has plaited a thick coat of connections over almost everyone, which has enabled what Zeynep Tufekci calls ‘computational politics’ (2014) and Sandra Braman the ‘informational state’ (2006, 314). The combination of big data and computational practices allows for colossal data gathering, massive covert campaigns of persuasion and social engineering (Tufekci 2014). The informational state has replaced the bureaucratic welfare state and, instead of looking after citizens, it now shadows people and pre-empt their behaviour (Braman 2006, 1).

Braman’s *panspectron* does not operate under the same Cartesian coordinates of time and space as Michel Foucault’s *panopticon* (1995). It functions in the ‘space of flows’, where social practices can happen simultaneously without ‘territorial contiguity’ (Castells 1992, 126–172). The panspectron gathers information about everything simultaneously and targets particular subjects as well (Braman 2006). This surveillance is *liquid*, based on a data flow as fluid as contemporary social arrangements, which are short term, frail and fissiparous (Bauman and Lyon 2013, 123).

Dataveillance replaces the ‘magnifying glasses and baseball bats’ of the twentieth-century state and corporate machinery with the ‘telescopes, microscopes and scalpels’ of the twenty-first century (Tufekci 2014). Surveillance data’s ability to zoom in and out on people and processes has been interpreted as a threat to civil rights by reactive data activists, the forerunners of data activism (Milan and Gutiérrez 2015, 127).

Activists, practitioners and journalists also use the data infrastructure. But most of them work with *small data*; namely, data that appear in a volume that makes them usable and analysable by humans. Analysis of big data can produce smaller datasets, and small data can become bigger when merged, scaled and interrelated (Kitchin and Lauriault 2014, 463). Jennifer Gabrys, Helen Pritchard and Benjamin Barratt speak of ‘good enough data’ to refer to data generated by non-experts via citizen sensing and crowdsourcing platforms (2016), such as the Ushahidi platform.

No theory of knowledge assumes that data leads to information and information to knowledge inexorably (Bellinger et al. 2004; Liew 2013; Zins 2007). The steps in the so-called knowledge pyramid must be climbed. Christine Borgman has argued for the dependent nature of data: data become information in the process of being transformed for use (2012). Interviewed for this book, Usman Haque, founder of Umbrellium—a company focused on designing participative architectural systems—shared a similar vision:

I speak quite strongly against the idea of data as a fetish since data per se are not a particularly useful goal, but the by-product of many other processes. They are not inevitable either ... I find it so ridiculous to think that somehow these things lead to the next.

There is ample literature dedicated to examining data as facts that can be verified, sensory *stimuli* that can be perceived or symbols that can be stored (Bellinger et al. 2004; Gitelman 2013; Liew 2013; Zins 2007). Data are of no use until put in a usable format and analysed in the context of other data (Rowley and Farrow 2008, 5; Trottier 2014, 52). In contrast, information consists of organised data with relevance, purpose and meaning (McKeever 2013). Information is found ‘in answers to questions that begin with such words as who, what, where, when, and how many’ (Ackoff 1999, 160). For data to become information, they must be contextualised, categorised, calculated, corrected or condensed (Davenport and Prusak 2000, 3).

Knowledge is information in action. Harlan Cleveland explains that information is horizontal, while knowledge is structured (1982, 34–35). Knowledge is a mutable combination of information, experience and beliefs that offers a context for absorbing new information. In organisations, it often becomes embedded not only in repositories, but also in organisational routines, processes, practices and norms (Liew 2013, 2).

Jürgen Habermas identified three types of knowledge: empirical-analytical, hermeneutic and critical (1968). An empirical interest can best be attended to through science or technology, which falls under the sphere of analytical knowledge (e.g. mathematics); interests that have to do with putting ourselves within a historical or cultural context are best tackled by hermeneutically derived knowledge (e.g. social sciences); and humans’ emancipatory interest in freedom connects with critical knowledge (e.g. political theory; *ibid.*). In data activism, the three types

of knowledge are mobilised: the use of the data infrastructure relies on empirical-analytical knowledge, while social action is supported by hermeneutically derived knowledge connected with the critical.

Namely, for data activism to be effective, tiers have to be climbed to progress from metadata to knowledge, and horizontal steps have to be taken as well, linking analytical to critical knowledge. In progressing from one to the next, mistakes can be made. As Alvin Toffler says, ‘the recognition that no knowledge can be complete, no metaphor entire, is itself humanising’ (1984, 11).

Daniel Innerarity establishes limits between information, which is currently available—sometimes excessively—through digital channels, and cognisant knowledge, which is a result of a process based on reflection and enables people to make sense of the world and live together (2013). Data activism can offer this type of knowledge as well.

The promise of new insights generated a wave of techno-enthusiasm. In 2008, putting his faith in algorithms, Chris Anderson declared the end of theory (2008). A famous study showing that sentences pronounced by judges fluctuate broadly for similar crimes depending on whether they were handed out before or after lunch (Danziger et al. 2011) is often quoted as an example of human fallibility, in favour of algorithmic decision-making (Letouzé and Sangokoya 2015, 22). The techno-enthusiasts highlight that humans are undependable as sources of information: people lie in surveys and pretend on social media. Following this line of thinking, the best approach to understanding what people do is analysing their data trails left on search engines, as Seth Stephens-Davidowitz has done in *Everybody Lies* (2017). Instead of relying on surveys and hypotheses, machine learning can breed scientific truths merely by pouring in data and letting the machine identify correlations (Cukier 2014). Not without controversy, the algorithmic prediction is being applied to policing, disease control, market performance and news-breaking, among others.

This approach is being tried in journalism too. Mar Cabra, head of the Data & Research Unit at the International Consortium of Investigative Journalists (ICIJ), says in her interview for this book:

There is a lot of potential in throwing the problem into the machine to see what it tells you. The ICIJ platform is gathering data from members all across the world and is developing algorithms to try to find connections we didn’t know existed. The machine is matching names, seeing whether

there is a cross-border connection somehow ... I see a potential in letting the data tell the story in the future. In any case, the best of both worlds is probably a combination of both methodologies; one informs the other. You cannot rely on data just for everything.

I do not subscribe to any form of blind faith in data; but, as Cabra says, this method is sure to produce results if contrasted and combined with others, and with real-life intelligence and context.

In research, areas as diverse as sociology and history are being impacted by the data infrastructure. Formerly it was only possible to examine fragments of bigger corpora and science has focused on getting information from limited observations (Miller 2009, 2). The study of the thirteenth-century Korean Buddhist canon, which contains 52 million characters distributed across 166,000 pages, is an example; with data analytics, the whole text can now be interrogated in its totality in every search (Lancaster 2010).

However, data pose many challenges. Tom Boellstorff argues there are no unadulterated data outside the conceptual world of humans; that is, data—and metadata—are always ‘made’ (2013). The problem with the comment about the judges’ study and Anderson’s technoptimism is that algorithms are also *made*. Humans can err, and for that reason neutral algorithms do not exist (Byrnes 2016).

Data activists often ponder about the potential and failings of data, as most of the interviews conducted for this book reveal. One interviewee, telecommunications engineer Oscar Marín Miró, thinks ‘these tools are like microscopes and telescopes, but a fallible human is always at the beginning and the end of the lens. Humans, not machines, should drive research’.

To obtain a number, one needs other numbers, which only exist once they pass through human filters (Stanley 2013, 90). To be precise, if one digs deep enough in any dataset’s origins, there is always a degree of subjectivity. Lisa Gitelman’s *‘Raw Data’ Is an Oxymoron* settled the question, stating that, although big data analytics gives the impression that it generates insights spontaneously, data are not devoid of intention and algorithms result from an aprioristic scientific framework (2013, 147–167). Therefore, we should not think of data as a natural resource, but as a cultural one that needs to be created, curated and elucidated.

In the times of anthropogenic climate change caused by burning fossil fuels, the portrayal of big data as the ‘new oil’ (*The Economist* 2017;

Singh 2013) is annoying. While ‘value’ is one of the ‘vs’ associated with big data—together with volume, velocity and variety (Laney 2001, 1; International Telecommunication Union 2014)—data are not valuable in themselves. Danah Boyd and Kate Crawford admonish us about the current data enthusiasm like this: big data are a mixture of technology, analysis and mythology, since they combine algorithmic power, pattern identification and the commonly shared trust in large datasets as sources of truth (2012, 3). Data are not the new oil.

Mel Hogan, Assistant Professor of Environmental Media at the University of Calgary and a specialist in the environmental implications of data centres, says in her interview for this book:

I think it’s important to examine data critically, and big data in particular. I don’t think numbers speak for themselves. I think it’s important to understand the context, source, method of acquisition, and underlying politics of any dataset as well as its representations and visualisations.

To start with, it can be difficult to find data. For example, global government openness dropped from 14% in 2014 to 9% in 2015 (Global Open Data Index 2016). *The State of Open Government Data in 2017* reports that in many countries data are hard to find and often not readily usable (Global Open Data Index 2017). This is shocking when considering this is mostly information about how governments administer everyone’s resources.

Datasets can be incomplete. The results of big data analysis depend on what data one is looking at (Lectaru 2015). Relying on social network analysis to observe social movements, for instance, is problematic. Talking about why big online data are ‘bad data’ for researching social movements, Jen Schradie lists several flaws, including that ‘hashtag data are often cherry-picked’ (2015). A problem in some social network studies has been choosing case studies based on high levels of social network usage, instead of the ability to mobilise people. Before one jumps into a dataset, one has to ask what the dataset represents.

Data can ignore people. There are two prominent hiatuses: data on the very rich and on the very poor. Big data tend to represent the middle-class hordes of *homines consumerici* (Lipovetsky 2016). On the one hand, elites are fluid and manage to escape controls. The former boss of Telefónica César Alierta once bragged about his old-fashioned Nokia cellphone: nobody was going to collect *his* data (La Información 2017).

On the other hand, although mobile technology is pervasive—to the point that there are more people with phones than with toilets (UN News Centre 2013)—many individuals on this planet do not have access to a phone, the internet or a bank account, do not live in a city and do not share, buy or chat online. They are invisible to the data infrastructure.

But even when referring to the middle classes, datasets offer an imperfect representation of the world. ‘Unrecognised bias’ in an algorithm can transform a program into a ‘discriminator’ (Byrnes 2016). Google Translate—whose algorithm improves by ‘learning’ from its users—is an example. If one translates ‘he is a babysitter; she is a doctor’ from English into Turkish (which does not have a grammatical gender), one gets ‘o bir bebek bakıcısı; o bir doktor’. If one translates the sentence in Turkish back into English, it turns out that she is the nanny and he is the doctor.

Bias can be deliberate, since data can be employed with undemocratic purposes. Seeta Peña Gangadharan argues, for instance, that vulnerable groups are systematically discriminated against by data-based snooping technologies, and that members of excluded communities become potentially more susceptible to the harmful effects of online surveillance (2012). Cathy O’Neil, in *Weapons of Math Destruction*, shows how big data-based programs increase the efficiency of ‘predatory advertising’ and undermine democracy (2016).

Data hide power imbalances between those doing the collecting and those providing the data, who then become data-collection targets (Andrejevic 2014, 1673). Interviewed for this book, philosopher and Gubernace Director Daniel Innerarity stated that the access to abilities separates those who can extract value from data—which could entail statistical calculation, code writing, storytelling and visual thinking—and those who cannot.

Even if datasets could be precise, how they are communicated and visualised is still a question of choice. Jan Willem Tulp, data experience designer and Director of TULP Interactive, creator of beautiful visualisations, explains:

For a visualisation there are so many design choices, so many parameters to play with that they can have drastic effects (on the design) when changed slightly. Data visualization ... is considered to be both an art and a science: there is theory behind it, things that research shows work well, simply because that’s how we humans perceive and process visual information ... Also the

context, goal, audience of a project are of influence. Making sure that you make choices on various levels that produce a result that works for that particular situation is also very much an art. But that doesn't necessarily mean that it's the best result possible: many alternatives may have never been explored that could be even better. So, in essence, my work can be described as finding a representation of abstract data that works for a certain situation.

Activists and practitioners are also aware of the fact that, contrary to what Simon Rogers declared (2012), data analysis is not for any 'punk'. Punks did not need to attend a conservatoire to play an instrument, but not anyone can analyse data without training. Accessing data skills can be challenging, but is especially difficult and dangerous in authoritarian regimes.

Andrew Feenberg points to another form of data exclusion generated when the majority of people are omitted from the decision-making processes of producing technologies to tackle data. Today's 'public life' is mediated by technical decisions, and 'the exclusion of the vast majority from participation in this decision is profoundly undemocratic' (2002, 3). That is, how code is written is mainly determined by elitist groups (although users can influence its usage and evolution).

Technology produces negative externalities too. Mel Hogan wonders about the tendency to highlight technology's ability to solve environmental problems (i.e. solar technology) and to crunch large datasets, while its ecological impacts are often ignored (2015, 1).

These problems do not evaporate when the same tools are used in activism. The study of data activism has to take into account that, while trying to correct asymmetries and empower people, it entrenches power inequalities, unbalances and mediations too.

Digital humanitarianism is, again, an example. Its distribution of roles, digital divides hidden in its practices and illusions of participation have been questioned. Lindsay Palmer (2014, 324), Teresa Sandoval-Martín and Óscar Espiritusanto (2016) raise questions about Ushahidi's reliance on corporate inventions such as Google's geographic information system (GIS) capabilities. Ryan Burns challenges the types of inclusion, categorisation, accuracy and visibility represented in crisis mapping, criticising the kind of knowledge that is shown, how decisions are made and the representative shortcomings of cartographic illustrations (2014). Kate Crawford and Megan Finn highlight the 'ethical challenges' of using social and mobile data to tackle disasters in digital humanitarianism

(2015), while for Chris Perkins, collaborative remapping reifies power relations (2014), and for Mordechai Haklay, ‘neogeography’ forms a ‘delusion of democratisation’ since it involves mostly ‘technology savvy, educated and well-off’ people (2013).

This complexity generates a paradox for data activism: equality and justice are among the goals that data activists aim for, many times using technology that harms people and transfers biases.

Although this book factors in these conflicts, the focus here is data activism’s ability to help build and empower communities across borders. The reaction to these challenges has generated wide attention (Boyd and Crawford 2012; Milan 2014, 2018; Milan and van der Velden 2016; van de Donk et al. 2004), while the proactiveness of data activism is yet to be explored methodically.

Whatever the gaps, biases and asymmetries, data capabilities are being mobilised by activists to support their struggles against discrimination, injustice, biodiversity loss, poverty and climate change. So the datafication process is not only about how every facet of our lives is transformed into data susceptible of being measured, analysed and repurposed as input for surveillance; it is also about how people and organisations obtain, generate and use data for social change. From the crowdsourced maps of Ushahidi to Forensic Architecture’s analysis of videos and satellite data and photography to recreate drone attacks, data analysis is being produced by people and organisations for a better world.

When walking a hundred metres down any street in any city, it is almost inevitable that these movements are registered by cameras, recognition systems, satellites, sensors or radiofrequency identification gadgets. We live in cities where buildings, distribution systems and pieces of furniture are gatherers of data, connected with networks: ‘The twenty-first-century city is a city under surveillance’ (de Vicente et al. 2014, 7). Mobile technology exacerbates this. It transforms us into *human antennae*: we carry devices that continuously release signals. Because of its pivotal role in data activism, mobile technology is worthy of examination.

By 2020, there will be 4.3 connected machines per person on the planet (Strategy Analytics 2014). Key drivers in the growth of mobile technology have been the plummeting prices of mobile appliances. But they have a disturbing face: the global trade in cobalt that puts thousands of children to work in countries like Congo (Amnesty International 2016, 29). Cobalt is used in the lithium–ion batteries prevalent in portable devices.

The expansion of mobile technologies in Africa offers a glimpse at the complexity of data activism. The average mobile subscription penetration is 80%, in comparison with 18% for internet penetration (Jumia 2017). This contributes to the massive accumulation of private data in the hands of governments and corporations, and to forms of inequality and injustice. However, Africa is becoming a ‘mobile-connected continent’, where phones are often the only information and communication technology (ICT) available (de Simone 2015). And this situation has made Ushahidi, a product of African ingenuity, possible as well.

Without being deterministic, ICTs and the data infrastructure can be seen as key drivers of data activism, thus examining their role in moulding behaviours is interesting here. Harold Innis describes the social changes derived from media in Ancient Egypt, where the use of hieroglyphics and stone was replaced by the papyrus and the brush as ‘a new and more efficient medium’, which offered the ‘monopoly of knowledge’ to scribes (1986, 2). Innis’s priestly class is to papyrus what today’s techno-bureaucracies are to the data infrastructure; but then again, the hold that techno-bureaucrats have on the data infrastructure is not as unyielding as Egyptian priests’ hold on papyrus. As Sampedro suggests, people will occupy big data if elites do not relinquish them (2014).

It is interesting to observe technology from a critique of technological determinism. Claude S. Fischer studied the influence of the telephone in society from this perspective. As with many technologies, the industry that developed telephones did not imagine how it would be used when it first became integrated into the private lives of average people. Women, says Fischer, were not supposed to have much use for it; but the industry soon learnt to promote it among them when it realised the business potential (2014, 25). That happens because ‘people typically turn new technologies into devices for doing what they have always wanted to do’ (ibid.). Some data activist projects apply the same thinking.

There are many examples of new technologies that have been transformed by unforeseen users. Thomas Watson, president of IBM, is supposed to have said in 1943: ‘I think there is a world market for maybe five computers’ (Strohmeyer 2008). If it were down to Watson, there would still be only a handful of computers in some military compounds and universities. Users influence technology and do not always react to new inventions as their creators imagined. Howard Rheingold describes how people transformed cellphones into instruments for social

mobilisation, an unintended outcome (2002, 157). Similarly, local communities are appropriating drones, which were produced first as military applications.

Feenberg says that the degradation of labour is rooted in ‘the anti-democratic values that govern technological development’ (2002, 18). Applied to mobile technology, this approach sheds light on our easy access to cheap smartphones, which depends on thousands of people, many of them children, working in conditions of slavery. If we paid decent salaries to professionals for the same job and mitigated the externalities caused by the extraction of the minerals needed in manufacture, prices would be much higher.

But ICTs have made mobilisation cheaper and centralised organisation less necessary. Employing ICTs, crowds behave like networks: they are flexible and scalable, and they withstand change better than hierarchical structures. Networks adapt to new environments, retaining their goals, ‘while changing their components’ (Castells 2009, 23). They can lose parts and continue moving.

Mobile technologies are changing how people create awareness, share information, organise and rally. The same phones that allow governments to snoop on their citizens also spread dissenting opinions.

Activism and Humanitarianism in Light of Big Data

Activism is to be recognised as an endeavour, individual or collective, designed to foster or guide political, socioeconomic or environmental change, with the intention of making improvements in society or correcting social injustice. Sara Ryan and Katherine Runswick-Cole differentiate between ‘advocacy’ and ‘activism’, considering the latter as implying a higher degree of involvement than the former. I use these terms as synonyms to simplify my arguments.

Lance Bennet and Alexandra Segerberg distinguish too between the logic of collective action and that of ‘connective action’ based on individualised content-sharing via media networks (2012, 3). Their emphasis is on the individual and the technologies employed in action.

Although this distinction may be helpful when thinking about some spontaneous mobilisations organised based on personal action frames that spread through social media, the model does not sit well with data activism, which is planned, collective and ideological. Proactive data activism may generate short-lived networks, but they are based on

underlying values and are organised carefully. Technology alone does not explain them.

Before social media, Alberto Melucci was already talking about individual motivation as the basis for joining solidarity groups (1996, 8). Melucci stated that, during the twentieth century, conflicts moved from the industrial-economic system towards the cultural space, focusing on personal identity, motivation and the codes of quotidian behaviour. Yet individual motivation does not undermine the concept of collective action. If one looks closely into any social movement that has been sustained over time, there is always individual motivation at the base, mixed with practices sometimes transmitted from previous movements, as well as shared values, which do not arise just because one is holding a smartphone.

Individualism has intensified in the twenty-first century, due to globalisation and consumerism (Bauman 2007; Lipovetsky 2016), while the possibilities of employing ICTs for mobilisation multiply, generating phenomena such as ‘smart mobs’, which allow people to act together, convened via social media even if they do not know each other (Rheingold 2002). Data activist communities share some of the smart mobs’ characteristics. For instance, the deployers, reporters and humanitarian workers that use the Ushahidi platform do not usually know each other (although within these communities they may do) and use ICTs to cooperate. This fact does not make these endeavours less collective, as is discussed later.

The digital poses two critical advantages for activism: cheaper costs for the coordination of protests, and a decreasing requirement for protesters to be physically together to collaborate (Earl and Kimport 2011, 197–201). By maximising these advantages, campaigning can combine a series of online and offline elements in the following areas: research and knowledge creation; communication and dissemination of information and messages; advocacy and direct lobbying; mobilisation and ‘digital activism’ (Joyce 2010; Jordan 2004; Rheingold 2002); as well as direct action or a public deed designed to bring attention to a problem, demonstrate a possible solution or obstruct an adverse outcome (Jordan 2004, 53).

There is no consensus about the exact role of ICTs and social media in inspiring mobilisation. Claims about the role of ICTs in the political upheaval in the Middle East and North Africa are still as unclear as the outcomes of some of these struggles (Duffy 2011; Emiroglu 2012).

Poell and van Dijk, for example, say that the ‘techno-commercial’ infrastructure not only facilitates mobilisation, but also steers and determines it (2015). That is, ICTs both enable and constrain activism.

The data infrastructure, combined with ICTs and other technologies, is making data activist projects possible too. It involves a series of practices at the junction of the social and the technological dimensions of human action, with the aim of either ‘resisting massive data collection’ (reactive data activism) or ‘actively pursuing the exploitation of available data for social change’ (proactive data activism; Milan and Gutiérrez 2015).

‘Reactive data activism’ comprises the critical practices of opposition to the menaces to civil and human rights that stem from the digital intrusion (*ibid.*). The bypassing of surveillance and control in activism is not a new phenomenon and predates datafication, for instance, via strict control of membership (della Porta and Diani 2006, 203). However, reactive data activism stands out as an activity that is supported by socio-technical artefacts to work with data or to shelter digital interactions from automatised collection (Milan and Gutiérrez 2015, 127). The technology that makes reactive data activism possible emerged at the periphery of society, a realm associated with grassroots activism, to become more accessible to non-experts, evolving from a marginal form of activism to a more general one (*ibid.*).

Proactive data activism is being put to work in humanitarianism and advocacy, which are intersecting but different concepts. The organisations dedicated to the betterment of humanity could be broadly divided into two types: humanitarian organisations, responding to immediate emergencies, whose action is typically short-term assistance until other institutions replace them; and campaigning organisations, dealing with the underlying socioeconomic factors which may have caused a crisis.

Humanitarianism in this study is to be considered as the efforts involved in providing material and logistical assistance to people and responding to crises, mediating conflicts and undertaking peacekeeping operations. The first objectives of any humanitarian work are saving lives, alleviating suffering and maintaining human dignity in the face of catastrophe. Humanitarian organisations usually work in collaboration with authorities so they can operate undisturbed. That is why they do not usually hold a position about those struggles, or at least they do not trumpet it. Digital humanitarianism is humanitarianism that uses the data infrastructure, especially interactive cartography and crowdsourced data, to support emergency and relief operations (Meier 2015).

Meanwhile, for campaigning organisations a central concept is long-term change, not just raising awareness. A campaign is a collection of actions, combined strategically during a specified period, to achieve change in policy or practice; the transformation of social attitudes; a change in decision-making processes; or empowerment of the affected communities so they can transform the situations that affect them (Chandler 2012).

Moreover, campaigning organisations are characterised by outlining a theory of change (ToC). Ideally the result of a collective effort, the ToC identifies the problem; detects the decision-makers who have the power to change; finds the entry points to reach them and describes how to access them; lays out a plan with concrete steps within a timeline; and states the final goal (Hivos 2015).

These organisations can go from being reactive (e.g. protesting) to proactive (e.g. lobbying), depending on how open the door for cooperation is with decision-makers. When dialogue is not possible, they can be forced to work from outside the community concerned. This is a significant concept, as it is the reason why organisations have been divided into ‘insiders’ and ‘outsiders’ (Chandler 2012, 4), and even ‘beyonders’ (Milan and Hintz 2013, 22).

Many organisations are hybrid, including development organisations with humanitarian programmes on the ground and the other way round. In the context of the financial crisis that started in 2007, for example, some humanitarian organisations in Spain understood that they also had to campaign for causes to justify their existence (Gutiérrez 2012, 225–230).

Groups or individuals can be empowered in data activism. Empowerment is the process through which people, by taking an active part, reshape processes and exercise control over their resources (Milan and Gutiérrez 2015, 128).

Another relevant notion is the use of emotions in campaigning, because no collective action happens without them (della Porta and Diani 2006, 13). Manuel Castells attaches great importance to feelings when studying the dynamics of power and social movements (2009, 202–210). And in fact, the study of emotions is increasing in political, social movement and communication scholarship. Jeff Goodwin, James Jasper and Francesca Polletta note that sudden changes can awaken feelings of fear, which can paralyse, and fury, which can mobilise people (2001, 16). Accordingly, Ignasi Carreras notes that social change can

only happen when there are high doses of indignation, together with an attractive proposal and a viable plan of implementation, abiding by the formula $C = I + M + P$, where C is ‘change’, I ‘indignation’, M a ‘model for change’ and P a ‘plan’ (2012).

Emotions and solidarity are essential to activate crowds. This means data activists face a challenge, since numbers are considered less compelling than human faces. Yet numbers are not devoid of persuasive powers (Kennedy and Hill 2017), and data activists count on data visualisations as vehicles for emotions. Shelagh Whitley, the leader of the fossil fuel subsidies (FFS) research at ODI, talks about how the visualisations employed in an FFS campaign stirred her emotions:

We mixed things. Did you see the animation? I got emotional watching that, but I am bought into the issue. This is not about crying people and things dying; it is not dramatic. But we used lots of infographics that are quite striking visually and rhetorically quite powerful.

That is, effective visualisations can awake emotions as well.

Another important aspect is democracy’s dependence on the media connecting information with people. An information overload—*infoxication*—coexists with the lack of information about critical issues, as the Snowden revelations demonstrate. This is crucial, because some of the data initiatives examined were prompted by the failure of news media organisations to provide relevant information. Some of these projects start as journalistic endeavours and later cross the line into advocacy, or the opposite: they produce editorial content in spite of being organisations of the civil society.

In the twentieth century, power dynamics led to the concentration of media ownership, which meant a few corporations controlled all content-producing processes, from the designer’s table into people’s living rooms. This situation brought about a negative impact on the quality of democracy. In some cases, the press offered a biased view of reality, failing the public (Alger 1998; Castells 2009, 61; Gutiérrez 2004). The mass media played a vital role also in ‘the manufacture of consent’, a concept coined by Walter Lippmann (2009 [1922]), who presented media as the vehicle for governmental propaganda. Edward S. Herman and Noam Chomsky would examine later how mass media collaborate in these propaganda efforts based on their dependence on markets, ‘internalised assumptions’ and ‘self-censorship’ (1988, 306).

In the ‘network society’ (Castells 2010), propaganda is exponentially enhanced, and the press continues to have an important function in spreading it, as Nancy Snow, John Stauber and Sheldon Rampton, among others, showed about coverage of the invasion of Iraq in 2003 (Miller 2003). However, the pervasiveness of smartphones equipped with cameras, fact-checking initiatives and data journalism has made propaganda harder to swallow.

Conventional media organisations, nonetheless, have seen their influence wither together with their circulation, audiences, rates and sales, and the linear communication model of sender–receiver is no longer valid today. The news media’s gatekeeping role (Park 1922, 328) has faded with the emergence of social media. Today other actors can decide to shed light on issues previously rejected in newsrooms. ‘Mass self-communication’ (Castells 2009) erodes the press’s power, blurs the limits between senders and receivers and turns the tables in the relations between ‘power and counter-power’ (2009, 239). Audiences are no longer passive, they are becoming content creators, in some cases competing in the same space with media organisations.

Despite the multiplication of senders and messages, content disseminated by media can not only convey but also create an image of reality (Ortiz-Ceberio and Rodríguez 2016, 77). This is important, because some data projects are originated by the need to speak directly to audiences and generate their own (counter-)narratives.

Having defined the basic notions mobilised in this book, next comes a description of its parts.

ROUTE MAP: SECTIONS IN THIS BOOK

This book is divided into five chapters designed as spiralling circles, organised from the most peripheral issues to the most central.

Chapter 2 describes the uses of the data infrastructure by governmental and intergovernmental agencies and the private sector on the one hand, and journalistic and research organisations on the other. As these applications are not the focus of the book, they are offered as context within which to position data activism.

Chapter 3 deals with proactive data activism as a social practice and offers a classification of cases. Proactive data activists can be categorised into four types: (1) skills transferers; (2) catalysts; (3) producers of journalism; and (4) actual data activists, most of them geoactivists using

interactive cartography. This chapter explores how the data infrastructure can help build democratic interactions, empower people and create alternative digital public spheres for action.

Chapter 4 is dedicated to the case study, Ushahidi, as a class of phenomenon that illustrates proactive data activism. The Ushahidi platform specialises in supporting humanitarian efforts in cases of crisis, armed conflict, emergency or disaster. By doing so in innovative ways, Ushahidi has generated a new paradigm in humanitarianism (Martin 2011; Meier 2015). The classifications proposed in Chapter 3 are tested against the case to see how Ushahidi fits into the description of a proactive data activist organisation. Here I use the word ‘victim’, aware of the fact that some human rights activists (HRDs) prefer ‘rights-holder’ to highlight that *victims* are entitled to protection. Although it is an important distinction, I do not use ‘rights-holder’ to simplify matters.

Chapter 5 includes the conclusions and a proposed model for effective proactive data activism, as well as suggestions about areas for further study. This final chapter offers a summary of the characteristics, objectives, repertoires of action, methods of data generation and empowering effects that are typical of proactive data activist initiatives, which is proposed as a non-normative model of proactive data activism.

A METHODOLOGICAL NOTE

This book responds to the questions ‘What is proactive data activism?’ ‘What do proactive data activism’s tactics and strategies look like?’ and ‘How can proactive data activism be effective?’

To do that, I resort to several disciplines, including critical thought, social movement and international relations studies, journalism studies, alternative and citizens’ media research and critical cartography. As della Porta notes, studies around these topics have tended to be siloed, but recently ‘some opportunities for reciprocal learning and interactions developed’ (2013, 86). This book profits from an integrating approach to explore how democracy, media, technology, activism and the data infrastructure intersect in proactive data activism.

I have chosen qualitative methods, which enjoy ‘tremendous growth’ in acceptability (Hammersley 1990, 10). This research uses ‘unstructured’ forms of data collection and employs descriptions and verbal data (Hand 2014). Qualitative data are ‘data enhancers’ (Vaterlaus and Higginbotham 2011) in that they provide thick descriptions (Schradie

2015) and make it possible to observe facets of the object of research that might be hidden. They are fitting to the study of data activism, a relatively unexplored phenomenon.

Both documents and website content produced by activists without my intervention, as well as interviews in which I prompt responses, are inspected to generate the data for this study. The classifications offered in this book are based on data, rather than theory.

As a data activist immersed in some campaigns, I also resort to participant observation, which grants me a privileged understanding of the workings of some processes as they take place (Balsiger and Lambelet 2014, 146). It is especially useful because it breaks the illusion of uniformity within forms of collective behaviour. However, there are limits to the level of granularity that can be offered.

The data-collecting exercise includes semi-structured interviews with data journalists, scientists, analysts, techies with a social purpose, social researchers, thinkers, data activists and developers of data platforms and tools for social change, selected based on their visibility and their experience or role. The sampling criteria are that interviewees depend on and deal with the data infrastructure in their work, define themselves as data journalists and activists, or use data with a social purpose.

How accurate my portrayal of them is can be discussed, since social scientists tend to attribute interpretations of the world to the people whose actions they analyse (Becker 1996, 56). I present them, paraphrasing Howard S. Becker, by talking to them, verifying their utterances with information that is available, and giving them questionnaires to induce them to say what they think (*ibid.*, 57). The objective is to gather their stated interpretations of their world. The semi-structured interviews follow the guidelines of qualitative research. That is, the interviewer and interviewees engage in a ‘highly formal’ interview (Bernard 2006, 210) and an ‘interview guide’ is developed (Robert Wood Johnson Foundation 2008). Semi-structured questioning is best used when there is no chance of interviewing someone more than once, as in many of the cases included here (Bernard 2006, 212). Most of the interviewees are based in a variety of locations and are highly busy people.

The case study targets a proactive data activism initiative—the Ushahidi platform—with the aim of tracing its evolution from its inception to the present, and understanding how people use data for humanitarian action. The case-study methodology is especially helpful when the boundaries between a phenomenon and its context are not evident

(Yin 2002, 13), as is the circumstance here. The subject has been chosen as a typical case. The study is descriptive and exploratory to show what proactive data activism looks like from proximity, to make the unfamiliar familiar and to provide a framework for future studies (Woodside 2010, 322). Ushahidi was selected because it is a complex example, which expands over the years and provides an insight into the context of this class of phenomenon (Davis and Wilcock 2003, 3).

As a pioneering geoactivist platform, Ushahidi presents inbuilt relevance. The case supports the development of a viable model of effective proactive data activism. I have considered Ushahidi to be a critical case as well, allowing the following type of generalisation: ‘If it is valid for this case, it is valid for all (or many) cases’ (Flyvbjerg 2000, 233). The case study comprises in-depth interviews with three of its leaders and a deployer, including different aspects related to the creation of the organisation, decision-making processes and real-life contexts and policies, studied holistically. Dozens of documents are analysed to verify and contextualise the data extracted from these interviews, which differ from the semi-structured ones in that they are longer and include more open-ended questions (*ibid.*, 264).

To further study proactive data activism, I work with concepts established as attributes—namely, a feature that is characteristic of the examined endeavour—to which values are assigned to designate their intensity in each case. The attributes’ frequency is then reviewed to determine which are more distinctive.

I have undertaken all translations included in this study, while the originals are included in footnotes. I also declare that I have no conflicts of interest and that I count on the authorisation of the experts interviewed to use what they disclosed in our conversations.

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CHAPTER 2

The Many Faces of the Data Infrastructure

Abstract Governmental and corporate surveillance make extensive use of the data infrastructure, combined with individualised targeting, real-time experimentation, behavioural science, modelling, and control of the data and media environments. However, these bodies also use data for less sinister purposes, such as providing better services and products. This chapter looks briefly at the many social uses of the data infrastructure by different actors, including governments, corporations and intergovernmental agencies, as well as researchers and journalists. The idea is to frame and contextualise proactive data activism.

Keywords Behavioural science · Big data · Data infrastructure
Modelling · Governments · Corporations · Research · Journalism

GOVERNMENTS AND CORPORATIONS

In *IBM and the Holocaust*, Edwin Black details how, in the 1930s, IBM provided technology to the Nazi government to catalogue groups of people (Black 2008). Today's surveillance involves inspection of not only groups, but also 'individuals, groups and contexts', which entails the capacity to reach beyond 'what is offered to the unaided senses' and what is 'voluntarily reported' (Ball et al. 2012, 26). That is, with the rise of big data, governments can now focus not only on groups

but also on individuals ‘as individuals’ (Tufekci 2014). Computational politics combines various elements: the ‘shift away from demographics to individualised targeting’; the ability to test methods in real time; ‘enhanced, network-based social engineering’; behavioural science and computational modelling; and algorithms that are ‘proprietary and undisclosed’ (ibid.).

Big data analytical tools promote a more profitable ‘engineering of consent’ than the one described by Edward L. Bernays (1947). This is an area where governments and businesses cooperate: the complex machinery devoted to spying on citizens requires ‘corporate collaboration’ (MacKinnon 2012, 8). Rebecca MacKinnon reveals Google’s and Yahoo’s history of censoring citizens at the request of China’s government, and Facebook’s submission of the identities of protestors to several governments. For all the dreams of liberty that technology has granted, it is also clear that the corporations that rule cyberspace are making decisions that affect civil freedoms. In fact, governments are gradually relying more and more on ‘private sector entities as regulatory agents, turning private centres of power to state purposes’ (Braman 2006, 34). Not only do tech companies participate in the monitoring of citizens without their knowledge, they also contribute to an *appliancised* internet, whereby ‘tethered’ devices (which can be modified only by the manufacturer) endanger the net’s capacity to find ways out of government control at the end-user level (Zittrain 2008, 8).

This state of affairs becomes more worrying in authoritarian regimes. There is a debate about whether firms chartered in free societies should collaborate in censoring repressed societies. As they do, authoritarian governments inherit abilities to enforce their will more easily (Zittrain 2008, 113). The governments of Saudi Arabia, China and Cuba have learnt to use the intricate machinery that can divide economic from political activity on the internet, for example (Kalathil and Boas 2003, 10). Because internet access in authoritarian regimes is frequently channelled via state-owned or approved service providers, the internet does not ‘inexorably’ undermine authoritarianism (ibid., 136). Extrapolating from Kalathil and Boas’s study, some of the same things could be said about the data infrastructure in non-democratic countries: it poses an opportunity for governments to tighten up control over citizens; at the same time, it is also a challenge for censors and propagandists.

In the space of flows, time and space have shrunk. The machine defies Isaac Newton’s laws since it can anticipate our desires. This is the

world of ‘predictive analytics’, which forecasts what might happen in the future with an acceptable level of reliability (Gibbs 2014). An example is Amazon’s ‘anticipatory shipping’ algorithm-based scheme. This system allows Amazon to ship products to the geographic area of the destination before the customer places an order without specifying the delivery address. The final destination is defined en route, when the actual order confirms the prediction made by the machine (Ulanoff 2014). Ubiquitous, instant, real-time communication produces tightening and shortening. As never seen before, contacts and friendships can be built and destroyed in seconds, creating a society that Bauman calls ‘liquid’ (2007) and Lipovetsky ‘light’ (2016). Businesses have gone from generating products to generating innovation. The speed and complexity of socioeconomic and political change place individuals, communities and even whole countries in a process of constant adaptation and uncertainty.

Since 9/11—as the 2001 Al-Qaeda terrorist attacks against the US are known—there has been a reduction of freedoms across the world, especially in the US (Patterson 2011). Massive surveillance is tolerated because we live in a society exposed to the ‘blows of fate’ (Ball et al. 2012, 7). According to Orlando Patterson, the gulf between these opaque measures to protect the US against terrorism and the positive perception that citizens still have of their freedoms has broadened (2011).

In the balance of today’s society, the weight of security seems to offset the weight of freedom, in a reversal of Miguel Unamuno’s motto: ‘the truth before peace’.¹ In the world of so-called post-truth, is this surrender of truth worth it? Many people think so. But the reality is that, although there has been no attack of the magnitude of 9/11 in the western world, dozens of bombings and attacks have happened while Big Brother was watching. Outside the western world, thousands of people have died as a consequence of terrorism in Mali, Nigeria, Cameroon, Iraq, Yemen, Philippines, Pakistan, Tunisia, Libya and Somalia.

Admitting that intelligence and undercover work are necessary, I do not think the panspectron is justified: it assumes that everyone can be guilty and gathers information just in case one goes astray, doing away with the presumption of innocence.

¹‘Mi divisa es: primero la verdad que la paz.’

Besides, governments employ the data infrastructure to increase tax compliance and revenues (Campbell 2014, 2); detect criminal behaviour (Gibbs 2014; Bogomolov et al. 2014, 427); improve public service delivery (Rutter 2014; Spotfire 2013); in an area where the public and the private intersect, help airlines avert bad weather (Andronie 2015, 153); generate accurate rainfall information (Andrade et al. 2014, 81); and improve primary care (Stokes et al. 2014, 4), among other applications.

Urged by the open movement, administrations are unlocking their data vaults so people can use open data; that is, data that can be freely used, reused and redistributed in a ‘convenient and modifiable form’ by anyone (Open Knowledge Network 2016). A variety of online platforms ease the task. For instance, the Open Knowledge Foundation has developed the open-source data portal Comprehensive Knowledge Archive Network (CKAN), which is used to release data catalogues; and Open Spending allows non-experts to delve into over 13 million government financial transactions from 66 countries (Open Knowledge Network 2016). However, this does not mean that public data are made available as the open data movement principles command. An example is the data portal of Saudi Arabia, which, according to the Global Open Data Index Survey, does not offer relevant information (2015).

Intergovernmental agencies are catching up with the data revolution, driving efforts to fill the gaps in information about the development world. United Nations Department of Economics and Social Affairs Under-Secretary-General Wu Hongbo has called for more data in development, as ‘statistics is shaping our understanding of the world’ (UNDESA 2015).

Corporations not only are part of computational politics, they also use these tools for their own purposes. Germany’s largest credit agency, SCHUFA, planned in 2012 to mine data to analyse what circles of friends say about the solvency of individuals in social networking sites to assess their creditworthiness (Hawley 2012). In 2014, Facebook conducted a psychological experiment on 689,003 users, tweaking what appeared in their news feed to measure the impacts on their emotions (Kramer et al. 2014).

Marketing professionals, whose primary challenge is to fathom their customers’ interests to sell more, are now getting away from traditional surveying, favouring big data approaches to finding information about their clients’ habits. In 2004, Walmart—the world’s biggest retailer—discovered using correlation analysis that Pop Tarts (a snack) were

heavily purchased by US citizens preparing for severe weather events such as hurricanes (Katrandjian 2015). Bunt Planet—a small company based in the Basque Country—uses data gathered by hundreds of sensors in the water service grids that it manages to make them smarter (Bunt Planet 2017). On a bigger scale, Vestas—a global energy company dedicated to wind energy—uses big data platforms to enhance the modelling of wind energy production and identify the optimal placement for turbines (Vestas 2017).

Whole industries, from energy and utilities to transport, are using big data to extract new information on production and delivery systems as well as customers' behaviour to tailor their services and products at lower costs, increasing their productivity. Telecom service providers, internet search engines, social media organisations and online commerce companies make extensive use of these techniques to come up with new services, optimise their management and improve their quality.

In fact, quantification is invading academia, law, public health, science, industry, economics, government and non-profits: 'It is hard to find an area that hasn't been affected' (Shaw 2014).

RESEARCH AND JOURNALISM

An often-quoted example of data visualisation is John Snow's map showing the cases of cholera in London in 1854. When positioning cases on the map, this precursor of epidemiology realised that cholera did not spread uniformly, but clustered around fountains, which were contaminated by faeces, demolishing other explanations. Today's population medicine continues to be shaped by data, only more intensely due to the enhancing properties of the data infrastructure. César Velasco, an epidemiologist who was showcased by *Forbes* as one of the 'top young leaders' of 2016 (Bertoni 2016), says in an interview for this book:

A paradigm change is happening: the ability to use real-time data and produce an immediate analysis to make evidence-based decisions is amazing: to be able to report and improve accountability processes with patients about data that have been gathered clinically or by the same populations, and then being able to use the analysis either to inform people or to act upon a situation. This changes the previous paradigm because what you get is a well-informed, participative population. It is putting epidemiology in the hands of people.

When talking about research as a separate practice from journalism and activism, I mean the activity that takes place mostly in research centres and universities, which has no other purpose than arriving at scientific truths. However, there is no journalism or activism without research, which then becomes an instrument.

Many areas of research are also being impacted by the possibilities offered by the data infrastructure. In the same way as journalists are no longer the gatekeepers of what is known, historians are no longer the sole guardians of historical archives. Ben Schmidt, for instance, says that the digitalisation of historical data is reshaping the role of the traditional historian, making it more relevant (2012). This rejuvenation takes place in relation to three practices: a new source criticism; a hermeneutics to read data into a meaningful form; and argumentation that ties the data into live questions (*ibid.*).

The digital humanities are opening the doors of technology for new kinds of research in history, literature, musicology, linguistics, art, cultural studies, philosophy, archaeology, sociology, anthropology and cultural studies, both using tools to explore the humanities as well as subjecting the technology to humanistic interrogation.

In the field of journalism, data have meant a breath of fresh air for journalistic organisations. The news media sector has experienced an enduring crisis as a result of the popularisation of ICTs and social media. In mature markets, circulation and audience figures have dropped on a yearly basis since the 1990s. Parallel to this downward trend, traditional publicity has fallen in favour of digital ads and aggregators such as Google and Yahoo! over media organisations' websites, undermining conventional media organisations' business models (Mitchell et al. 2014). Meanwhile, newsrooms have withered and journalists have been fired en masse: 'Journalism is under siege' (Lorenz 2012).

For democracy to function, citizens have to stay informed about those in power so they can make decisions. To do that, ordinary people rely to some extent on journalists who analyse data. Journalists are not only mediators; they can be essential for activism as well. Stefan Baack acknowledges a link between activism and journalism. In a series of interviews, he concludes that intermediaries are indispensable to make data and information available (2015). Similarly, in an interview for this book, Oluseun Onigbinde, co-founder of BudgIT, conceived data journalism as 'one of the underlying layers that can enable data activism in the quest to expand the fold of active citizens'.

Therefore, the revival of journalism, through data, is significant. Data journalism has injected new blood into reporting as a business too. In 2014, ‘State of the News Media’—a report of reference published yearly by Pew Research Centre—started to notice a new ‘level of energy’ in the news industry (Mitchell et al. 2014). A look at the Data Journalism Awards, granted by the Global Editors Network the same year, shows the excitement of data journalism, from ‘Reshaping New York’, about how the city has changed in 12 years (*The New York Times* 2013) to *La Nación*’s ‘Declaraciones juradas’, about the private assets among Argentina’s main public officials (2014). Other notable examples include, for example, ‘Vidas contadas’, a project halfway between journalism and activism, which gathers documents from the Civil War in Spain. Data have come to journalism’s rescue: ‘If we had continued this way, the professionals and professors of journalism would have become cadavers, or worse, zombies’ (Sampedro 2014, 10).²

Media as a sector deserves attention here mainly for three reasons. First, some journalistic specialisms have much in common with data activism. Second, NGOs are producing data-based journalism. Third, data journalism has opened the path to a more intense use of data tools, also in activism. The first two elements are explored in Chapter 3; the latter is tackled in this section.

Habermas criticised the commodification of private affairs, reinforced by the mass media, which turned citizens into passive spectators and created a pseudo-public sphere (1991, 171). For Noam Chomsky, mass media were interested in diverting people’s attention from real issues (1997, 1–2). In the network society, Castells criticises the effects of the concentration of media ownership and the deterioration of content quality (2009, 56). Data journalism seems to be a remedy for some of these ailments: it deals with issues that matter, does not resort to a he-said-she-said journalism and has been the basis for new business models.

According to the mass self-communication model (Castells 2009), social media made it possible for anybody to produce content and disseminate it, which is a phenomenal shift in power relations. This change in the flow of information has led Jodi Dean to declare that the net is a site of conflict, where different ‘issue networks’ struggle for hegemony (2003, 110).

²‘De seguir así, los profesionales y profesores de periodismo éramos cadáveres. O peor, zombies’ (ibid.).

In this context, data journalism emerges as the incarnation of *The Guardian's* 1921 motto: 'Comment is free, but facts are sacred' (Scott 2002). Some of the interviews carried out for this book point in this direction. For instance, Sampedro, head of a postgraduate programme on digital citizenship, thinks data are restoring journalism's self-esteem, and Cabra moved away from the 'human stories' of television into data because of their potential to tell the whole story.

But what is data journalism? For Mariluz Congosto, a telecommunications engineer interviewed for this book, what separates traditional, investigative and data journalism is the different sources of information they employ. Conventional reporting is 'based on people' (e.g. face-to-face interviews), investigative journalism relies on documents that 'cannot be processed automatically', whereas data journalism depends on the data infrastructure, which allows automatic processing of vast amounts of data. Although there is something in what Congosto says, what defines a journalistic specialism is not the sources or the tools, but its purpose. Investigative journalists' main objective is to shed light on a secret that some power is interested in concealing (Hanson 2017). Meanwhile, conventional reporters disseminate factual information, and data journalists use the data infrastructure as an analytical and communication tool.

Data journalism may or may not resort to visualisation as a communication tool. An example is a report broadcast in 2012 by Vivelohoy—a TV channel that is part of Tribune Publishing of Chicago—about a wave of jaywalking arrests in Champaign and Urbana, Illinois, based on US Census Bureau data requested via the Freedom of Information Act (FOIA). Vivelohoy visualised the data on a map, realising, as John Snow did, that there was a concentration of jaywalking arrests in two areas of the city. Its reporters went to these neighbourhoods to interview their inhabitants, only to realise that the communities where jaywalking was rampant had no sidewalks and were mostly black (Lowenstein 2012b). This is an instance of data journalism, even though there is no use of visualisation to communicate the findings, but it is not investigative journalism, because the data were public. Vivelohoy's virtue was to find a story hidden in public data (Lowenstein 2012a). The piece was part of a wider campaign, which transforms it also into advocacy journalism, or the use of journalism to promote a specific cause (Jensen 2015, 18). What made this story successful was what Paul Bradshaw calls the new possibilities unlocked by combining the traditional 'nose for news' and storytelling skills with the scale and range of data (2011).

Investigative journalists were some of the first actors to realise the power of data analysis. This development runs parallel to the emergence of civic hackers. That is why 2010, the year that WikiLeaks released a collection of Afghan and Iraqi documents, could be a good point of departure to mark the systematic use of data in journalism (Sampedro 2014, 4). There had been previous signs of change. Between 2005 and 2007, some digital tools began to emerge for data analysis in journalism. In 2007, the Knight Foundation awarded a prize to the ‘Everyblock’ project, which allowed users to access information about their neighbourhood based on data. In 2009, the *St. Petersburg Times* won the Pulitzer Prize for its ‘Politifact’, which analysed data on the 2008 elections. Thanks to the interest these projects generated, Hacks/Hackers—an international network that connects journalists (‘hacks’) and technologists (‘hackers’), facilitating skill exchange (Hacks/Hackers 2014)—emerged in 2009. In 2010, the European Journalism Centre organised the first conference on data journalism. The following year, in the MozFest held in London, led by Mozilla, an initiative to write the first *Data Journalism Handbook* was born (Bradshaw 2011). Also in 2011, the Knight Foundation awarded a prize to 16 data journalism projects, allocating US\$4.7 million to develop them. Today, the Knight Centre for Journalism in the Americas, the Poynter Institute and Investigative Reporters and Editors offer courses to train journalists in data analysis, visualisation and digital tools. However, the year 2010 is iconic.

In that year, five media organisations—*The Guardian*, *El País*, *The New York Times*, *Der Spiegel* and *Le Monde*—became WikiLeaks’ partners when they published their analysis of the US diplomatic cables leaks, consisting of hundreds of thousands of classified documents that had been sent to the US State Department by 274 of its embassies, consulates and diplomatic delegations between 1966 and 2010. The cables revealed the US government’s view of the world. The five newspapers published part of them, without including the identities of the sources (Ball 2011).

These revelations had consequences, and some deem them the catalyst for the 2010–2011 uprising in Tunisia, the Arab Spring’s birthplace (Lynch 2014). The Tunisian protesters found support for their complaints in the leaked cables (Dickinson 2011; Kirkpatrick 2011).

In 2011, WikiLeaks made the 250,000 cables public, without protecting the identity of its sources, an action that was criticised for not

adhering to proper journalistic standards. Although relying on undisclosed sources is controversial, it is good journalistic procedure to protect the identity of the sources if the information has been confirmed independently. Reporters Without Borders, a press freedom group that maintained a backup version of the WikiLeaks site, revoked its support for the whistle-blowing organisation (ibid.).

Despite this apparent breach, Sampedro defends WikiLeaks and notes that the leaks had circulated for a whole year without any consequences, since David Leigh, a journalist at *The Guardian*, had published the password for them in a book (Sampedro 2014, 193). In *El cuarto poder en red*, Sampedro quotes WikiLeaks as an example of how to put in practice a prototype of the critical press, and argues that new journalistic practices rooted in collaborative technology and data mark the start of better journalism.

The implications are weighty. Access to data is a considerable challenge, for both journalists and activists, since data vaults are controlled by governments and corporations. In places where governments do not practise open data and corporations guard them, some journalists and activists are currently experimenting with methods to generate and appropriate data. Whistle-blowing, in fact, has become a source of ever-larger datasets, to the point that Guy Caron has labelled this ‘the era of the leak’ (2016).

In 2013, Snowden offered several media outlets top-secret NSA documents, leading to revelations about massive surveillance. In 2016, ICIJ’s ‘Panama Papers’, a leak of 11.5 million financial files recording 40 years of thousands of transactions from financial entities in 200 countries, exposed a labyrinth of crime and corruption hidden by secretive offshore companies based in Panama. The Panama Papers is an example of data journalism’s influence on policy as well. The stories on tax paradises prompted ‘high profile resignations, criminal and civil inquiries, policy changes and official investigations on four continents’ (Cabra 2014).

In 2017, an even bigger set of 13.4 million confidential documents was analysed by ICIJ journalists, revealing more details of the offshore machinery in 19 jurisdictions hiding the wealth of the elites.

This liveliness of data journalism is accompanied by a proliferation of platforms, conferences, workshops and hackathons for data analysis (Stencel et al. 2014). Journalists are also using data to move beyond journalism, and to jump from observation into denunciation, raising awareness and recommendations, a form of journalism that could be

called ‘advocacy data journalism’. An example is ‘Keep it in the ground’, a campaign where *The Guardian* openly mixes advocacy and data to foster greenhouse gas (GhG) emission cuts (*The Guardian* 2015).

Congosto thinks that the data visualisation tools available today in other fields owe a debt of gratitude to journalism. Visualisation guru Alberto Cairo agrees. To his surprise, his book *The Functional Art* (2013) quickly became a text of reference not only for journalists, but also for scientists, statisticians and business intelligence people, he says in an interview for this book. That is, the fact that activists have greater access to visualisation tools than ever is thanks to journalists who have pioneered the art of using them.

Data journalism is having other impacts, for instance the positive effect on political discourse of initiatives such as ‘Chequeando’, which employs volunteering fact-checkers to verify political speeches in Argentina (McGreevy 2015). Through the strategic use of ICTs and data, new initiatives have emerged across the world exploring new narratives (e.g. Ojo Público), user interfaces (e.g. Poderopedia), interactive cartography and crowdsourcing (e.g. InfoAmazonia).

There is a plethora of new players partly fostered by data. In Spain, the massive layoffs experienced in mainstream newspapers have inspired (or forced) sacked journalists to come up with new business models, some of them in the form of cooperatives where employees are shareholders. *Eldiario.es*, which is a spinoff of a spinoff (founded by former journalists of *El Público*, which, in turn, was created in 2007, profiting from a wealth of redundant journalists), emerged in 2012 as a progressive online daily. More than 50% of the company that owns this daily is in the journalists’ hands. Other media organisations that emerged from the economic crisis include *Vozpópuli* (created in 2011), *lamarea.es*, *Materia* (2012), *Infolibre* (2013), *El Español*, *Okdiario.com* (2015), *esdiario.com* (2015) and *El Independiente* (2016). Some of them practise data journalism and include journalists among their shareholders; all of them are digital natives.

Spain is a compelling case for this book. It has the media sector with the lowest levels of trust in Europe (Reuters Institute 2016). Only 34% of Spaniards trust their news media, in comparison with two-thirds in Finland (ibid.). Although the digital media mentioned seem determined to revive journalism, they have not done enough yet to change this perception. A mixture of factors may have coalesced to generate mistrust, among them the corruption scandals that plague politics; the youth of

the democratic media institutions (e.g. the veteran *El País* was founded in 1976, whereas *The Guardian* began in 1821); the support that the media offer to political parties and big businesses; and the low level of openness of the institutions.

Open data can be a catalyser of data journalism and activism. However, while the FOIA was sanctioned by President Lyndon Johnson in 1966, in Spain the Transparency Law came into force only in 2013. A time interval of this magnitude translates into a deficiency in data outputs. Considering the media's reluctance to practise data journalism, some civil society organisations in Spain produce data journalism themselves, filling the gap. David Cabo, Director of Civio, says in an interview for this study:

Soon we realised that convincing administrations to publish their data would require significant effort and advocacy and that an amateur association didn't have the momentum and strength to do the needed work. Hence the need for an organisation with full-time employees managed professionally and with clear goals. We couldn't find any (organisation) doing this type of technology-based work, so we founded Civio.

María Ávila highlights that, in the Spanish-speaking world, civil society organisations, such as Civio in Spain or Fundar in Mexico, seem more proactive in producing data stories than the press (2016).

In some countries in Latin America, the earlier establishment of transparency laws has stimulated data projects (Ávila 2016). In Argentina, for example, *La Nación* set up a joint team of programmers and data journalists to produce stories; in Brazil, *O Estado de S. Paulo* has a coordinator, two journalists and a developer who writes code for data visualisations or applications (Zanchelli and Crucianelli 2012). In other countries, the results are mixed. While there has been a transparency law in Mexico since 2003, efforts to reuse public databases have been isolated (Ávila 2016).

Open data-based projects may be losing steam. According to Craig Mills, Vizzuality's Chief Executive Officer, interviewed for this book, a few years ago the open data movement forced some governments to unlock their data stocks and there was some enthusiasm around open data usage, but currently there is much more effervescence around data projects produced within civil society and new ways in which to gather data. Many of the cases explored in Chapter 3 corroborate this.

Although data journalism seems increasingly popular, even its pioneers are lagging behind the promise and the expansion of these technologies is not homogeneous. The authors of *The Goat Must Be Fed* conclude that ‘many US newsrooms are not taking advantage of the emerging low-cost digital tools’ and some editors tend to adhere to familiar practices (Stencel et al. 2014). These authors note that the proliferation of awards, events and conferences creates ‘a sense that the adoption of data reporting and digital tools is broader than it really is’, and that there is a gap between ‘digital haves and have-nots’ (ibid.). The key obstacles to a general adoption of data are a lack of technical ability and a reluctance to disturb old-style reporting behaviour (ibid.). Sandra Crucianelli, Knight International Journalism Fellow and consultant for the Knight Centre for Journalism in the Americas, says in an interview for this book that there is much room for improvement in the use of the datasets in newsrooms. Cabo shares the same view regarding a general acceptance of data:

There’s still huge potential for growth in the civic tech and transparency/accountability sectors in Spain: public administrations are just starting to release information, which will need to be monitored, analysed and verified by independent non-profit organisations like Civio. Citizens are now learning about their access to information rights and starting to realise it’s their duty to monitor what their governments are doing.

Data journalists have pioneered new analysis and storytelling techniques, making it easier to practise impactful reporting, and have revitalised journalism, inspiring new ventures in a sector that appeared to be exhausted. As a result, there are more players and more enthusiasm around data. The fact that data journalism has not been universally embraced leaves space for civil society organisations to explore the possibilities of data as well. Chapter 3 is dedicated to exploring the uses of the data infrastructure in activism.

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CHAPTER 3

Proactive Data Activism

Abstract This chapter examines data activism from different perspectives, defines it and offers a classification of cases. Proactive data activists can be skills transferrers, specialised in transmitting skills and creating platforms, training and tools; catalysts, funding projects; producers of journalism; and data activists and geoactivists, using interactive cartography. Depending on how they gather data, data activists can be divided into several subgroups: they can rely on whistle-blowers; employ open-source datasets; use crowdsourcing tools; appropriate data; and create data. This chapter offers definitions of notions (e.g. crisis and activist mapping) and data activists' action repertoires and examines the associations that have been fashioned around data. Finally, it explores how the data infrastructure can help build democratic interactions, empower people and create alternative digital public spheres for action.

Keywords Data activists · Geoactivism · Whistle-blowers · Open data
Data platforms · Data power

Data can be engendered, amassed and used by alternative actors to governments and corporations. Because of the 'troubling practices of dataveillance', it is vital to consider alternative forms of data that 'enable the less powerful to act with agency in the face of the rise

of data power' (Poell et al. 2015). The central issue of this book is how the less powerful are gaining agency through employment of the data infrastructure.

There are incentives to use data for campaigning and humanitarian operations. The fight for social and environmental justice is deeply imbued with emotion, and data can confer robustness on campaigns, enhance humanitarian operations and fuel social change. However, to date stories of big data's progress have tended to come from the government and the private sector, while we have heard little about the applicability to social organisations (Small and Anderton 2014). This book tries to adjust this imbalance.

THE DAWN OF DATA ACTIVISM

Snow's cholera map can be interpreted as an early case of data-based advocacy as well as a landmark in epidemiology. For Tactical Tech, it is 'information design applied to analysis and advocacy' (Emerson 2008, 9). There might be other early cases of data activism, but Milan and I saw the dawn of data activism in the civil response to dataveillance produced 'in the fringes of society' (Milan and Gutiérrez 2015) by reactive data activists.

Reactive data activism relates to 'resistance to the threats to civil and human rights' that stem from corporate and government surveillance (Milan and Gutiérrez 2015, 122). Advancing from a marginal to a dispersed phenomenon, this process happened as data technologies became more accessible and skills were transferred from the elitist hacker to the common user. Data activism evolved into a less antagonistic movement in the same way as some *black hats* became *white hats*, or hackers with a cause (Gorenstein-Massa 2013, 63).

Proactive data activism materialised as data practices turned into more popular behaviours. Cabo explains:

Activists increasingly realise that independent, fact-checked data gathering and analysis can reinforce their narratives, validate their theories of change and justify their demands. We at Civio use data whenever possible when advocating for change.

A polyhedral analysis of data activism allows scrutiny of how this happens.

PROACTIVE DATA ACTIVISM SEEN FROM DIFFERENT PERSPECTIVES

Paraphrasing Christian Fuchs (2010, 173), data activism could be considered as self-organised, citizen-controlled, self-managed and non-commercial activism, which funnels content that communicates visions of an alternative world for social change utilising the data infrastructure. This is examined here from the perspectives of communicative action, journalism, alternative media and international relations studies, social movement theory, monitorial citizenship and the public sphere.

From a Communicative Action Perspective

Since data activist initiatives involve interactions, they can be examined through the lens of the theory of communicative action (Habermas 1984). Data activist initiatives entail full-blown communicative actions: they have a character that is empirical-analytical, because when dealing with data they involve a scientific exploration; hermeneutic, because datasets need to be interpreted; and critical, because they are related to a cause framed by sociopolitical factors.

Like any communicative action, data activism integrates the objective, social and subjective worlds. Data activism includes teleological or purpose-oriented elements (e.g. linking actors and facts in the objective world); norm-regulated factors, which place actions in the social world (e.g. campaigns based on political construals); and elements of dramaturgical action (e.g. campaign leaders bringing along their subjective worlds to mobilise others).

Thus, applying Habermas's definitions, proactive data activism could be thought of as a social meaning-building process realised through communicative action, defined as collaborative action based on people's mutual understanding that seeks to generate social change using the knowledge extracted from datasets.

From a Journalism and Alternative Media Studies Perspective

This section returns to the commonalities and differences between data activism and several branches of journalism.

Data activism and conventional journalism share the fact that they are both ideally based on research as a source of precision. The difference is

one of aims. Journalism is supposed to focus on revealing facts, because the first obligation of journalists is ‘to tell the truth’ (Kovach and Rosenstiel 2007, 23). To be exact: for journalism, the research findings are the final objectives, whereas the research in campaigning is usually regarded as a tool to support its goals.

To observe the role of research in activism, it is useful to look at ‘information activism’ (or *info-activism*), which the Tactical Technology Collective (known as Tactical Tech) defines as ‘the strategic and deliberate use of information within a campaign’ (2009). In journalism, there is no other strategy (ideally) than revealing facts, even if they contradict the initial assumptions, the same way as in the scientific method. However, info-activism (and activism in general) must use information strategically; otherwise, it is of no use.

In some cases, data activists may not have elaborated a postulate beforehand. Emma Prest, interviewed for this study, mentioned a project she is working on with Global Witness, in which activists ‘analyse and process a bunch of data on who owns companies in the UK to examine offshore tax havens’. The approach in this project is abductive, which starts with an incomplete set of observations and proceeds to the most probable explanation. In the tax havens project, the analysts do not formulate hypotheses. If they find associations, ‘there is a potential to shape a campaign’ around them; if not, that possibility expires, says Prest. She admits, though, that the opposite is more frequent in campaigning: you usually first create a campaign (based on previous research) and then find the data to support it.

Another distinction between conventional journalism and data activism is that the latter takes a subjective turn of a dramaturgical nature when it distils alluring messages or visuals from research to mobilise people.

Yet not all journalism is the same. Alternative journalism’s values are guided not only by what is considered *news*, but also by alternative approaches to news gathering, which represent a direct challenge to the conventional media’s ethos of objectivity (Downing 2011, 18). Mainstream journalism is based on the ‘empiricist assumption’ that it is possible to identify facts, ‘accurately and without bias’. In contrast, the ideal of alternative journalism contends that it is impossible to divorce facts from values (ibid.). Nevertheless, these values do not invalidate alternative journalism’s truths. Alternative journalism argues that different forms of knowledge may be generated, representing ‘multiple versions of reality from those of the mass media’ (ibid.).

Mainstream media, nonetheless, do not always adhere to their own rules. Examples of blunders abound. In 2004, *The New York Times* admitted it had been less than impartial when publishing false information about Saddam Hussein's government based on 'a circle of Iraqi informants, defectors and exiles bent on regime change' (2004). The paper was referring to reports that corroborated what George Bush was saying about Saddam's involvement in the 9/11 terrorist attacks and storage of 'weapons of mass destruction', which served to justify the invasion. Except none of it was true. However, gaffes should not revoke the potential of mainstream media's journalism.

Non-commercial media offer a space where journalism and activism overlap. Robert Hackett and William Carroll refer to their 'oppositional communication practices' focused on 'lifeworld change', which bypass mass media gatekeepers to communicate with the public directly (2006, 14–57). The same description fits some data activist projects.

Alternative media are manifestations of what Nancy Fraser calls *subaltern counterpublics*, an expression of marginalised groups forming their own post-bourgeois public spheres, as a challenge to hegemonic views (1990, 58–61). Alternative public spheres constitute unconventional channels for unconventional ideas. Data activist projects often compose alternative public spheres that allow for the sidestepping of mainstream gatekeepers to communicate counter-narratives directly with stakeholders.

Over the years, media scholars have proposed different labels to describe non-commercial grassroots media: Clemencia Rodríguez prefers 'citizens' media' (2001, 2009), Downing radical and alternative media (2004, 2011). Alternative media are produced outside mainstream media networks and tend to be produced by amateurs who seek to rectify imbalances in media power structures (Downing 2011, 15). Rodríguez proposes the abandonment of 'alternative media', because the concept 'rests on the assumption that these media are alternative to something' and emphasises an oppositional logic (2001, 20). Meanwhile, 'citizens' media' implies that 'a collectivity is enacting its citizenship by actively intervening and transforming the established *mediascape*' and that their communication practices empower the community (ibid.).

I would distinguish between alternative and citizens' media, in that the former puts the accent on either new ways of communication or new actors and ideas brought to reporting, while the latter highlights collective, grassroots, non-hierarchical ways of producing information, which

can be alternative as well. Seen in this light, Inter Press Service—a news agency specialised in development issues—could be considered alternative, but not a citizens’ media organisation, since its content is produced by a structure of specialised roles (e.g. reporter, contributing writer, editor, fact-checker). On the other hand, Radio Vallekas—where community citizen journalists report on local news—is citizens’ media producing alternative information. The fact that some of the citizen journalists who learnt the ropes at Radio Vallekas went on to become journalists in commercial channels was only possible because some processes can be comparable in alternative/citizen and traditional journalism. Interestingly, this transfer of skills seems to confirm Rodríguez’s rejection of a mediascape inhabited by either powerful mainstream companies or powerless alternative organisations (2001, 64).

It is a fading belief that only trained, salaried journalists within traditional media organisations can understand the ethics involved in reporting. Citizen journalists may also be activists within the communities they report on. But the reality is much more complicated than a simple dualistic vision. For instance, there is a growing field of action within civil society organisations that specialise in fact-checking stories, when media organisations which published them do not (e.g. the Accuracy in Media project). In the face of lack of access to information, citizen journalism has also been a source for mainstream media. An example is the Syrian civil war. The ban on international reporters generated a ‘growing dependence on citizen journalism’ (Bahja 2013).

Dan Gillmor, among others, is asking for a more open discussion about the ethos of objectivity in journalism (2011). In a similar vein, Media Ethics calls for a re-evaluation of objectivity and advocacy (2013). Media Ethics suggests that when people demand objectivity, they mean honesty, transparency and relevance. Bill Kovach and Tom Rosenstiel do not talk about objectivity as a goal in journalism, but about seeking the truth, being independent and exposing the facts confirmed by the method of verification (2007, 26). In citizen journalism, these values translate into thoroughness, accuracy, fairness and transparency (Gillmor 2005, 2011).

Related to this, another branch of journalism—advocacy reporting—shares some characteristics with data activism, in that it openly embraces a political perspective. It is fact based, but it explicitly takes sides (Careless 2000). However, being an advocate journalist is not the equivalent of being an activist: ‘No matter how dear a cause is to a journalist’s heart, there are lines which should never be crossed by a professional journalist’

(ibid.). That is, in the convergence of journalism and advocacy, the former prevails. An example is *The Guardian*'s 'Keep it in the ground' campaign.

Data activism is similar to citizen journalism in that it often includes bottom-up, grassroots, participative initiatives in line with Fuchs's thinking (2010, 173). People formerly known as the *audience* now generate their own content and disseminate it online. This phenomenon has 'busted open the system of gates and gatekeepers' that regulated access to information (Rosen 2006), a model that was based on the scarcity of information and space to communicate it. In the process of gatekeeping, editors were the sole custodians of what was debated in the public sphere (Park 1922, 328) and citizens depended on journalists' ability to harvest and transmit information. But this changed with the emergence of citizen journalism, which, like data activism, deliberately positions itself in the realm of subaltern counter-publics.

Another point of contact between citizen journalism and data activism is collaboration. They both require the development of skills that are not usually part of the skillset of old-school journalists or activists. Consequently, the engagement with data stimulates alliances.

Summarising, data activism and journalism share several characteristics, including the fact that they are both based on research. Although activism uses information as a tool in campaigns and humanitarianism, it is similar to alternative media, in that it frequently generates counter-narratives and channels, and to citizens' media, in that it can place citizens at the forefront of content production.

From an International Relations Studies Perspective

Most data activists deal with international or even global issues (e.g. climate change). The data infrastructure is especially suitable for studying global trends, since it offers the possibility to zoom in and out on problems to capture both the whole and details of microscopic dimensions. Data analysis and visualisations—especially maps, which are universally understood—are practical tools to communicate campaigning messages at a global level as well.

Nation, state and territory demarcated the limits of societies until the advent of the globalisation, when the territorial boundaries were redefined (Castells 2009, 7–15). In the network society, human interactions occur in the space of flows, while ordinary humans struggle in 'the space of places' (Castells 2010, 407–453). Data activism has both local and global dimensions.

Because the elites are ‘invisible and shifting’, with the power to invest locally without being exposed to risks, a ‘negative globalisation’ has occurred as well. This is globalisation based on ‘trade and capital, surveillance and information, violence and weapons, crime and terrorism’ (Bauman 2007, 7). Meanwhile, the experience of ‘negative globalisation’ for the rest of us who are ‘doomed to be local’ is one of anxiety (*ibid.*, 5–27). Globalisation forces all countries to compete, look for their advantages, make the best use of their resources, raise their production and increase their consumption (Touraine 2007, 65).

However, constitutions are national, while the sources of power are progressively supranational (Habermas 2001, 61). As a result, there is a perception that national politics have shrunk to the management of the local, which ‘deprives political controversies of their last bit of substance’ (*ibid.*). In spite of the globalisation process taking hold of our planet, politics is local (Bauman 2007, 82). This is not to say that the nation-state disappears, but it becomes just one of the dimensions in which power and counter-power function (Castells 2009, 18).

Local politics have to deal with worldwide threats. An example is climate change. Most developing countries have not contributed to creating the problem, but they are more vulnerable to and are less prepared for climate change impacts than rich countries, which are the biggest emitters of GhGs. Another example is illegal fishing, a crime that does not respect boundaries and creates irreversible damage to local communities (Daniels et al. 2016, 6–9).

In spite of it, there are human rights spaces which are still dependent on national policies (e.g. national laws on migration within European countries). State control of the internet is becoming prevalent both in authoritarian regimes and in democratic ones (Kalathil and Boas 2003, 173).

This means that organisations confronting international issues must deal with local realities and fight at a global level, a space where transnational advocacy networks (known as TANs) are formed. TANs aim to make a difference in international regulation or practice that affects political, socioeconomic conditions across states on behalf of those who are influenced by trends (Fraser 2014, 72–73). TANs must also take into account that, while most global challenges are long-term issues measured in decades, political agendas only expand over four or five years.

Margaret E. Keck and Kathryn Sikkink define TANs as networks of social actors across countries characterised by sharing values, who utilise information strategically, influence policy and ‘transform the terms and nature of the debate’ (1999, 90). ‘Network’ highlights the

changeable relations among actors working in specific issue areas (*ibid.*, 91). And ‘advocacy’ encapsulates what is distinctive in these transnational networks: they support principled causes (*ibid.*). Faced with huge challenges, activists often work cooperatively, in loose coalitions of advocates building bridges across borders (Keck and Sikkink 1999). Suitably, data activist networks frequently ‘take the form of trans-border de-localised communities’ (Milan and Gutiérrez 2015, 134).

One example is the FFS campaign led by Oil Change International (OCI), which seeks to expose ‘the true costs of fossil fuels’ (Oil Change International 2016). This transnational campaign takes the shape of a TAN—together with ODI and the Global Subsidies Initiative (GSI)—and has research at its core, since it analyses large datasets on FFS in several countries. Each of the partners contributes something different to the campaign: OCI and GSI offer their knowledge of the oil sector; ODI contributes its experience of looking at trends from a development perspective. The coordinated action links research, advocacy, campaigning, media outreach and journalism, with the goal of developing public awareness and change policy. The findings of the research indicate that the Group of 20 (G20) countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the UK, the US and the European Union) dedicate US\$444 billion annually to FFS for oil and gas production; in comparison, G20 support for the Green Climate Fund—an international commitment designed to help developing countries fight against climate change—was only US\$7.5 billion in 2014 (Doyle 2014). The difference is the basis for the campaign messages. Since 2013, there have been significant positive policy changes (Timms 2016), although it is difficult to attribute the results to this TAN’s work.

Civil society organisations frequently cooperate, but there are different levels of cooperation. A loose alliance may not require a formal central structure coordinating the coalition and can include strategic partnerships. Torbjörn Einarsson calls these ‘umbrella associations’ (Einarsson 2012).

With a higher degree of centralisation, some campaigns embrace different organisations with a minimal coordination structure. They can include Global Action Networks (GANs), which are systemic change agents active on multiple levels and engaging in boundary spanning (Waddell and Khagram 2007, 263–265). An example is the Global Call to Action Against Poverty (GCAP), a worldwide alliance of national campaigns (Global Call to Action Against Poverty 2017).

Meanwhile, the highest level of cohesion is in transnational organisations that agglutinate national chapters under a brand name, with a varied degree of political, financial and action independence. Examples include Oxfam and Greenpeace.

Proactive data activist organisations seem to thrive in alliance with others with different levels of cohesion, and often work across boundaries and form TANs.

From a Social Movement Studies Perspective

Instead of TANs, some data activist initiatives behave like social movements. However, defining what a social movement is can be tricky. A social movement is neither a political party nor a campaigning organisation; it is not an association or an interest group; it is not a fad or a trend (Christiansen 2009, 2). It is somewhere in between.

Social movements are networks of organisations and diffuse actors with common interests, organised, yet informal and horizontal, which engage in ‘conflictual relations’ with opponents, use unconventional means, are associated in informal systems and share a ‘collective identity’ for social change (della Porta and Diani 2006, 20; Shirky 2008, 163; van de Donk et al. 2004, 88). Social movement campaigns are frequently decentralised, with diverse groups functioning self-sufficiently or with minimal coordination, sometimes with changing targets, but under the same defining goal (ibid.). Social movements generate ‘raw materials’ for future movements (e.g. the partisan song ‘Ciao, bella’); create ‘political know-how’ that future protestors can utilise (e.g. Gandhian hunger strikes); leave behind ‘social ties that that can be used to ignite new efforts’; and generate ‘a moral voice’ (Goodwin and Jasper 2014, 381).

Data activist projects can form such entities. An example is the Ushahidi deployment ‘Ayuda Ecuador’, launched to support humanitarian efforts during the earthquake in 2016. This deployment was put together by volunteers from a bunch of organisations, including FLOK Society and Soporte Libre from Ecuador, ThoughtWorks from the US, Ayni Consulting from the UK and the global Association for Progressive Communications. It operated as a leaderless, loose structure, but coordinated collectively and guided by common goals.

By forming a loose egalitarian network that spreads beyond boundaries and embraces diversity and informality, Ushahidi looks like a social movement (Grabowski 2012). Its deployments are often initiated by a

few people, but depend on a large group of volunteers from different organisations. Maria Grabowski, who has interviewed about thirty deployers and volunteers, says that they felt they were ‘a part of something bigger’ (ibid.). In this light, Ushahidi can be regarded as a movement of smaller movements, or deployments with their own agenda.

Alain Touraine explains social movements in connection with capitalism as a capacity for ‘massive mobilisation of discontented wage-earners and consumers’ (2007, 21). This is pertinent, since many data-based initiatives seem envisioned to redress forms of socioeconomic exclusion that globalisation has created.

Touraine initially seeks signs of a unified social movement, different from the one that represented the class clash between workers and owners. One broad social movement is the World Social Forum (WSF), which emerged as the antithesis of the World Economic Forum in 2001. Some considered it as a manifestation of the global civil society, as it gathered NGOs, TANs and GANs, campaigns and social movements. The most prominent WSFs took place in 2003 (Porto Alegre), 2004 (Mumbai) and 2005 (Porto Alegre), where up to 155,000 registered participants gathered. Its influence was significant.

However, from 2006 onwards the movement became decentralised, and its prominence started to fade. In developed countries, the financial crisis that started in 2007 forced social actors to look around their immediate environs more closely and withdraw from the global arena, focusing on the local dilemmas created by unemployment, unjust wealth distribution, austerity measures, decaying public services and massive evictions, giving birth to other social movements, global in values but local in nature. The difference to previous movements lies in the full employment of ICTs and the data infrastructure, for example the use of interactive maps based on crowdsourced data by the Platform for People Affected by Mortgages, known as PAH, in Spain.

Milan thinks that social movements develop their identities around their technological practices (2013). Whether technology has a positive impact on people’s participation is a matter of discussion; but technology is at the centre of some social movements and has allowed, for example, the monitoring of the state by civil society organisations (Howard 2010, 154–156). Speaking about high-tech surveillance in China and Iran, Larry Diamond highlights the liberating potential of ICTs, since activists in repressive countries have managed to leverage the properties of digital technologies to organise dissent (2010, 80). In the case of data

activism, activists' selves are moulded by being tech-savvy advocates who place their skills at the service of a social cause.

Similar to social movements, data activism works towards long-term norm change and is identified by the use it makes of technology to create collective identities, communicate, mobilise, demonstrate and act. Data activists form horizontal, informal and organised networks that make unconventional use of technology and generate disruption for social change.

From a Monitorial Citizenship and Public Sphere Perspective

Data activism also facilitates monitorial citizenship and the configuration of ephemeral public spheres.

Talking about the role of ordinary citizens in reporting, Stuart Allan introduces the concept of 'citizen witnessing' as a public service (2013, 10). He pays special attention to the actions of ordinary people who feel bound to partake in the making of news. In bearing witness, they make key inputs to coverage, reinvigorating journalism (ibid., 8). Allan's concept may be close to what the Ushahidi platform, among others, does.

A step beyond witnessing, Michael Schudson thinks that citizens must fulfil their 'monitorial' obligation to know enough to participate in political affairs (1998). Data activism can facilitate this function too. An example is the InfoAmazonia project, which strives to capture all pertinent information around human rights, climate and environmental issues in the Amazon region, deploying sensors, scrutinising satellite imagery and crowdsourcing data (InfoAmazonia 2017). Monitorial citizenship is a 'year-round and day-long activity' (Schudson 1998). Similar to monitorial citizens, the journalists and activists who collaborate with InfoAmazonia engage in watchful environmental surveillance.

Data-enabled monitorial citizenship could be considered a reversal of massive surveillance, or what Steve Mann, Jason Nolan and Barry Wellman call *sousveillance* (2003, 338–348). These authors note that citizens use digital tools to counter government and corporate snooping (ibid.). *Sousveillance* denotes bringing the surveillance cameras down to the human level, either physically (e.g. installing wearable cameras on people) or 'hierarchically' (e.g. when ordinary people do the watching; ibid.). The panopticon is inverted, then, and the inmates start watching the sentries.

Many data projects practice *sousveillance*: from the satellite imagery summoned by InfoAmazonia and the Automatic Identification System signals analysed by Forensic Architecture in the ‘Left-to-Die Boat’ project (Forensic Architecture 2016) to the drone-enabled images from the Indonesian forest (Radjawali and Pye 2015) and the recording of police brutality during protests (Holmes 2012; Copwatch 2016).

These monitoring capabilities are unbridled within the alternative digital public spheres generated by data activism. Habermas defined the public sphere as a phenomenon that emerged in the ‘enlightened’ bourgeois salons of the eighteenth and nineteenth centuries, until its remodelling due to ‘the influence of the capital-driven mass media’ in the twentieth century (1991). In these gatherings, the nobility and the *grande bourgeoisie* met with intellectuals on an equal footing and, as a result, individual opinion became emancipated (*ibid.*, 33–34).

That is, in the public sphere everyone is a participant. Despite being an idealisation, this condition of symmetry has political power. In a space where everybody has parallel access to information and participates in decision-making processes, change is possible. That is what happens, within limits, in data activism.

This notion has experienced ebb and flow. It was criticised for being theoretical, leaving out men from the lower classes and women, and ignoring the heterogeneity of the public (Calhoun 1992; Webster 2006). Nonetheless, the public sphere was invigorated with the rise of ICTs, due to the fact that these technologies seem to expand opportunities for interaction, encourage citizen activity and enable participation (Papacharissi 2002; Rheingold 2002). Habermas reassessed the concept, suggesting that ‘a world public sphere’ could become a reality (1996, 514). However, in the network society, the public sphere does not remain intact. The rise of ‘digital contention’ generates a ‘structural transformation of the public sphere’ (Celikates 2015, 14). In the new public spheres, access, participation and interaction are relentlessly renegotiated in an open process connecting multiple arenas and actors (*ibid.*). In light of massive state and corporate surveillance, for Tufekci, the public sphere is less *public* (2014).

This regeneration, again, encountered more disapproval. Discrepancies followed between national and translational publics (Bohman 2004), the ‘proletarian sphere’ (Negt and Kluge 1993) and the ‘networked public sphere’ (Friedland et al. 2006), as well as discussions about how the notion of the public sphere could not be related to the internet (Dean 2003) and social media (Fuchs 2013).

Michael Froomkin explains how Habermas's theory applies to activism: the forces needed to push public decision-making come from 'a re-energised, activist, engaged citizenry' collaborating in small-scale communicative institutions (2003, 753). Although he admits that technology does not guarantee any outcomes, Froomkin proposes that ICTs can generate the conditions for civil action (ibid.). Taking Froomkin's discourse a little further, data technology can help create new digital public spheres where the local and the global intersect.

As access to technology increases, and in spite of the inequalities rooted in the data infrastructure, these alternative digital public spheres have the potential to comply with the condition of symmetry. Although the deployers of the Ushahidi platform act as gatekeepers (e.g. data reported by witnesses must be verified and there are filters regulating who can be a deployer), inside these public spheres all actors are participants.

Like the public sphere, alternative digital public spheres remain idealistic, but, interpreting Frank Webster (2006, 202), I prefer to hang on to this ideal as something to seek. After all, most mission-driven organisations strive for visions of a better world that will never materialise, and that does not make them less useful.

From the Perspective of Tech Activism

Milan and Hintz propose that tech activists are considered 'beyond-ers', as opposed to insiders or even outsiders, who reject policy processes but do not go further (2013). This division connects with the idea that humanitarian organisations work as insiders while campaigning organisations are usually outsiders. Beyonders, instead, 'question the legitimacy of power-holders and address them through protest and disruptive action' (ibid.). They typically hold 'no dialogue with institutions', bypass regulation and expand 'unregulated spaces', setting up 'alternative infrastructures and generating alternative sets of rules' (ibid., 22).

Some reactive data activists could be deemed beyonders; proactive data activists, instead, do not conform to the same description. They can create alternative tools for action, as in the case of Ushahidi's platform for digital humanitarianism. But these groups often utilise existing technologies without qualms about their entrenched asymmetries. Proactive data activists lack the confrontational, elitist, out-of-the-system nature that defines beyonders.

Tech activism has roots in the hacker counter-culture organisations that emerged in the 1960s (Milberry 2005, 21). Although the terms are not exact synonyms, tech activism has been called ‘internet activism’, ‘online activism’, ‘digital campaigning’, ‘electronic advocacy’ and ‘cyber activism’. For this study, I use tech activism and cyber activism as substitutes. Tech activism employs ICTs to propagate messages, communicate, lobby, build communities, mobilise them, organise action, and crowd-source and crowdfund initiatives.

As tools develop, tech activism finds new ways of mobilising followers, enriching its repertoires of action and intensifying its impact. Data activism could be considered an expanded form of tech activism, in that it is activism enabled by a highly sophisticated form of technology (e.g. the data infrastructure). Data activists often use the internet as a platform for disseminating information too; when they do, they become part of the broader movement.

Recapitulating (see Table 3.1), proactive data activism generates communicative actions; like journalism, it is based on research and is guided by independence; similar to alternative media, it creates unconventional

Table 3.1 Proactive data activism seen from different perspectives (*Source* Elaboration by the author based on Milan and Gutiérrez (2015))

<i>Perspective</i>	<i>Description</i>
Communicative action	A communicating action, with empirical-analytical, hermeneutic and critical elements
Journalism studies	Similar to investigative/data journalism for its analytical nature, and to advocacy journalism for its political stance
Alternative/citizens' media studies	Facilitates unconventional channels and narratives. Involves altering the everyday relationship between citizens and automatized data collection. Places citizens at the forefront of production, and is collaborative and bottom-up
International relations studies	Is local and transnational at the same time, based on collaboration across borders
Social movement studies	Works towards long-term norm change and gathers people around shared values and goals, and the specific use they make of technology to form a collective identity, communicate, convey, mobilise, demonstrate and act
Monitorial and public sphere perspective	Data projects facilitate monitorial citizenship and generate alternative digital public spheres for collaboration and action
Tech activism	Proactive data activism lacks the confrontational nature of ‘beyonders’

narratives; and like citizens' media, it places ordinary people in the vanguard of production. Data activists sometimes take the role of the press when they produce journalism. Some data activist projects establish TANs around a campaign; others form broad, horizontal networks around shared goals, utilising unconventional means in favour of conflictual aims. Finally, proactive data activism facilitates monitorial citizenship, creates alternative digital public spheres and is part of the tech activist movement.

The following section explores concrete cases and provides a classification.

SKILLS TRANSFERRERS, CATALYSTS, JOURNALISM PRODUCERS AND GEOACTIVISTS

Kennedy, Poell and van Dijck argue the need to ground studies of big data in real-world practices, and conclude that the debate on code power 'leaves little room to explore the small-scale actors who are making organisational adjustments to accommodate the rise of data's power' (2016, 2). Data are not only forcing organisations to make adjustments, as Prest notes in her interview; they are also inspiring new projects on a small scale in the 'real world'. In this section, I inspect some data activist initiatives.

Based on what they do, proactive data activist initiatives can be initially divided into four categories: skills transferrers, catalysts, producers of journalism and proactive data activists. Next comes an exploration of these different types.

Skills Transferrers

This cluster of initiatives is considered part of the data activist family because it makes data activism possible by responding to diverse challenges, building networks and bridging the gap between skills holders and the unskilled.

Some of these organisations focus on transferring data skills. I refer here only to those that work as independent organisations, excluding formal education centres.¹ For example, DataKind strives to transfer

¹I, for one, head a postgraduate programme called 'Data analysis, research and communication', which precisely transfers data skills within the formal framework of the University of Deusto.

data science into social institutions. DataKind—funded by donations and companies including Microsoft, Tableau and IBM—brings together organisations ‘to collaborate on cutting-edge analytics and advanced algorithms’ to tackle complex issues (DataKind 2015). DataKind places volunteering data scientists in social organisations to work together on projects.

Bayes Impact, supported by Microsoft, Tableau and LinkedIn among others, is ‘a group of full-time data scientists, engineers and academics who believe data science can be used to solve the world’s most ambitious problems’ (Bayes Impact 2015). This group creates ‘operational solutions to social problems by building software for governments and non-profit organisations’ (ibid.).

The School of Data, with its motto ‘evidence is power’, describes itself as a ‘network of data literacy practitioners ... implementing training and other data literacy activities in their respective countries and regions’ (School of Data 2017). Its mission is to ‘empower civil society organisations, journalists, governments and citizens’, training them in the skills they need to use data (ibid.). Led by the Open Knowledge Foundation (OKFN) and Peer 2 Peer University (P2PU) and supported by organisations such as Tactical Tech, it is committed to advancing data literacy in civil society.

Sometimes the data skills transferred are specialised. Facilitated by technology, attacks on HRDs have escalated, with an ‘increase in the number of entrapments and networks being compromised’ through the use of ICTs and data (Hankey and Clunaigh 2013, 536). Given the resource disparity between them and their adversaries, some organisations try to build HRDs’ capacities in digital security (e.g. Tactical Tech).

Apart from working with data journalists, Code for Africa—funded by World Bank Group, Hivos, Bill & Melinda Gates Foundation and the International Centre for Journalists, among others—liberates ‘dead-wood’ data, runs a fellowship programme, organises training, roundtables and hackathons, and supports the ‘development of citizen-driven solutions’ (Code for Africa 2016). To maximise existing tools, it champions reuse (ibid.).

Organisations with other business models, such as Data4Good, can be skills transferrers too. Data4Good was ‘a social business’ based in Brazil that aimed to ‘promote the usage of data’ connecting the corporate

world with social causes (Data4Good 2015).² There are many examples, especially if projects producing data journalism are included, as this variation might be one of the most common ways in which data skills are acquired by NGOs. InfoAmazonia, for example, offers data training not only to journalists, but also to activists and communities. However, Prest, from DataKind, notes that there are difficulties in finding social organisations that can absorb data skills, while there is no shortage of volunteering data scientists willing to devote time to social causes pro bono.

The first phase in the development of any organisation, according to Greiner's Growth Model, is progression through creativity (Exponential Training 2016), and in the case of non-profits this is often based on charismatic leaders (Carreras 2012). There are many programmes that are focused on transferring skills from other fields into NGOs that may have grown out of their comfort zones. As they have gone through a professionalisation process, advocacy organisations are currently producing budgets, indicators and strategies. Civil society organisations have been adapting skills from the private sector for decades now. However, I have always thought that businesses had to learn from NGOs. In fact, there are a few organisations dedicated to training data scientists and researchers to work with social issues: they are the social science skills transferers.

The question of 'knowledge for what' presented by Robert Staughton Lynd (1967) remains a vital standpoint in any data project, no matter how large the dataset, complex the technology or beautiful the visualisation. Your average data scientist may know how to 'play' with complex datasets, but he or she may lack the skills to make them socially relevant. That is why some projects specialise in training data scientists to work with non-profits. DataKind's ability to find numerous volunteering data scientists reflects the appetite there is in this area. Interviewed for this study, Marín Miró predicts:

In the future, as big data and related technologies are commoditised, the focus will shift to the social sciences, and data teams will be led by people with social and communication backgrounds.

Angela Oduor, Director of Community Engagement, expresses associated ideas when talking about Ushahidi and the role of collaboration versus the role of technology:

²Data4Good does not seem to be active currently.

The technology is only 10% of the equation; the other 90% is something else. For example in an election monitoring case, the electoral observers, the law enforcers, the electoral body governing the entire election are the agents fulfilling the final goal. The key to success is getting feedback data that is actionable from the ground, and that is not only technology.

Another example is Data Science for Social Good, which teaches ‘data scientists to tackle problems that really matter’ through a fellowship programme. The programme brings dozens of data scientists to the University of Chicago to work with non-profits, local governments and federal agencies ‘at the forefront of public policy decision-making’ (Data Science for Social Good 2015). This modality has other followers, including the eScience Institute of the University of Washington, in collaboration with Urban@UW and Microsoft (eScience Institute 2016) and Georgia Tech.

The third subgroup in this category consists of the *matchmakers*. These organisations focus on putting together representatives of different communities, stimulating contacts and seeing if magic happens. Medialab-Prado, in Madrid, specialises in summoning people from all sorts of profiles—from artists and designers to journalists, social workers, campaigners, coders and engineers—and enabling collaboration between them around concrete projects. It works like this: for two weeks the representatives of some pre-selected projects present their ideas to an audience summoned for the occasion and make a case to marshal support. The onlookers have the opportunity to ask questions and make a decision about which project to support for the remainder of the time. Medialab-Prado defines itself as a ‘citizen laboratory of production, research and broadcasting of cultural projects’ that explores the experimentation and learning in digital networks and promotes a ‘culture of data’ (2016).

Hacks/Hackers, although focused on transferring skills for journalism, displays match-making aspirations too. This organisation aims to help ‘members find inspiration and think in new directions, bringing together potential collaborators for projects and new ventures’ (Hacks/Hackers 2014). For example, Hacks/Hackers Africa, part of the broader movement, works in alliance with others, including the International Centre for Journalists and the World Bank, as ‘a match-maker’, linking technologists with content creators and data liberators (2016).

Finally, the data tools developers complete this category. The main areas of development of tools for non-profits are to be found in

crowdfunding and crowdsourcing; communication, networking and collaboration; media monitoring; metrics; and mobile activism (Social Brite 2016). In a subordinate position, tools to enhance privacy and protection can be found as well, responding to concerns expressed before in connection with HRDs. Data tools for advocacy are still bring up the rear of what is on offer, but there are new businesses, such as Outliers Collective, Vizzuality, Kiln-Data Visualisation, Social Brite and Morlan, among others, which specialise in offering this kind of service to NGOs, mainly digital cartography.

Vizzuality is a company that creates applications ‘with a lasting benefit to society and the environment’ (Vizzuality 2016). It has developed, for example, maps for Global Fishing Watch (GFW) by the campaigning organisation Oceana, in collaboration with Skytruth and Google, to visualise fishing activity.

Some organisations combine pro bono work for worthy causes with consultancy work. CARTO supported the ODI/porCausa campaign against illegal fishing, producing interactive maps based on satellite data. CARTO offers a free version of its interactive mapping tools, and also supports social causes by providing technical support to NGOs that seem worthy.

Populate describes itself as an organisation dedicated to ‘conceptualise, design and build products for civic engagement’, to enable citizens and organisations to understand and interact with the world (Populate 2016). Populate was behind the data analysis and design of the ‘Panama Papers’ investigative story.

General tool developers such as Tableau provide vehicles for data visualisation and analysis to anyone who can pay for these services, but include open, simpler versions as well.

Some of the organisations mentioned also deliver data tools. One is Civio, which develops tools that ‘reveal the civic value of data’ (Civio 2016). Hacks/Hackers Africa provides tools for data projects too.

This is a growing field where there is a newcomer almost every day.

Catalysts

In this cluster, there are organisations that specialise in making data activist projects possible by funding them. As has been said, Code for Africa as well as the Open Knowledge Foundation, Open Society Foundation, Hewlett Foundation and Shuttleworth Foundation, to

mention just a few, could be included here, since they are donors or conduits of resources for data activism. Lesser-known organisations that can be classified as catalysts include Nominet Trust, among others.

In the intergovernmental arena, UN Global Pulse, an United Nations initiative, aims at harnessing data for the public good by accelerating ‘discovery, development and scaled adoption of big data innovation for sustainable development and humanitarian action’ (Global Pulse 2016). The types of projects supported by this programme include ‘Using mobile phone data and airtime credit purchases to estimate food security’, in which the UN World Food Programme, Université Catholique de Louvain and Real Impact Analytics are participating. This is another growing field of action.

Producers of Journalism

Civil society organisations that produce journalism were mentioned earlier when discussing the uses of data in journalism. The fact that some organisations practise both data journalism and activism makes distinctions difficult. However, where in journalism relevance is the guiding principle ruling whether a story is worthy of publication, in advocacy the campaign objectives reign over other considerations.

The non-fiction comics project ‘Vagabundos de la chatarra’ (‘Scrap Drifters’) can serve as an illustration of the blurring of lines dividing journalism and activism. It is a year-long effort that has produced a book and a website with some visualisations, although this is not a full-blown data undertaking. The project—put together by journalist Jorge Carrión and designer Sagar Forniés—comprises observations, maps, interviews and accounts of people who collected and sold scrap metal for a living during the economic crisis in Barcelona. These authors describe it as journalism. However, the way it is communicated is hybrid (Gutierrez et al. 2018). Carrión, interviewed for this study, defends the formula, saying that in comics journalism what is essential is social commitment and the monitoring of power. It sounds like advocacy.

Another interviewee, Matthew O’Reilly, Deputy Trust Executive of Indigo Trust, expresses similar views:

I think that separating data journalism from data activism risks creating a false dichotomy. Data journalism should—or can—be considered a form of data activism. If data activism refers to using data/facts for the purpose of

encouraging awareness and change of a particular problem, data journalism fulfils much the same role. While the problems and solutions that data journalists and data activists champion may be very different, the underlying rationale of informing and changing remains the same.

Several factors can compel organisations to take up a journalistic role. The first element is the perception of a lack of coverage of vital issues. Climate change is an area where this can be observed. Former Greenpeace International Executive Director Kumi Naidoo, for example, criticises NGOs for taking up the role of signalling the difference between the scientific evidence on climate change and the propaganda published by ‘climate sceptics’ (Naidoo 2012, 113), whose research is mostly funded by fossil fuel companies (Goldenberg 2015). By performing journalism, NGOs are bringing attention to the fact that journalists are not doing their jobs. Naidoo is not comfortable in that role: ‘We shouldn’t have to do the job of journalism in sorting out real research from paid agents’ (2012, 113).

There has been an increasing politicisation of climate policy by a group of spokespeople, funded by the oil industry, refuting the anthropogenesis of climate change (Boykoff and Roberts 2007, 6). The problem is that some media organisations feel they must provide a balanced view on the matter, offering equal space to both sides (Vidal 2017). This situation has generated an avalanche of ‘climate sceptical’ reporting that bears an undue influence on scientific literature, which campaigners feel must be neutralised.

A second factor determining the production of data journalism by NGOs is the lack of access to public data in some countries, which transforms access into a struggle best steered by a campaigning logic. The gap that NGOs are filling is more evident in countries where transparency laws determining access to data are yet to be voted for or are recent. In these countries, individual citizens, artists and organisations are getting involved in journalism to demand open public data. This is the situation in Spain, as seen earlier.

At an individual level, Cabra is, again, an example. She explains how, when moving from the US to Spain with the idea of practising data journalism, she realised that she had to campaign for a transparency law before she could even gain access to public data, because the data were not *public*, much less open. She got involved in the campaign for a transparency law in Spain.

Still today, journalists turn to activism as a lever to open doors, since passing the transparency law meant winning just one battle. Recently the conservative government ruling Spain has started to take legal action to avoid responding to citizens' requests for information (Sevillano 2016).

To counter these movements, Civio publishes data-based news and information, among other things. Its project 'Quién manda' ('Who Is in Charge'), for instance, offers a journalistic story that reveals that 249 majors were seeking re-election in 2015, in spite of the fact that they broke the law when they had failed to submit their municipal budgets to the Court of Auditors (Gavilanes 2016). Cabo says in his interview about another story-producing project:

We're particularly proud of some of our journalistic projects, like 'El Indultómetro': we've seen a clear reduction in the number of (arbitrary) pardons granted each year, going down from an average of 500 pardons per year over the last 20 years to just 75 in 2015. We've also seen increased transparency in how pardons are reported by the Government and by the media ... We've shown how data journalism can be used to elevate the debate from pardons seen in isolation to trends across 20 years.

Other projects supported by Civio include 'Dónde van mis impuestos' ('Where Does My Money Go'), visualising where tax money comes from and how it is spent; 'El BOE nuestro de cada día', digging out stories hidden in the massive official Spanish state gazette, the so-called BOE; and 'Tu derecho a saber' ('What Do They Know'), channelling public information inquiries sent by citizens.

In Spanish-speaking countries with young transparency laws, similar cases can be observed. In Mexico, Morlan is a private company working with media organisations to help them publish data analysis with three criteria: scientific robustness, social context and design. At the time of writing, Morlan is putting together a project analysing videos of the electoral campaign to respond to questions about how presidential candidates present their proposals during debates, based on image analysis. Morlan works together with journalistic organisations, such as El Universal, in joint data projects (Redacción El Universal 2016).

A third factor is lack of data competences. Not all organisations have the ability to engage with the data infrastructure. Innerarity, interviewed for this book, highlights the fact that, in spite of growing data access, only an elite group achieves competence when it comes to controlling

the whole process, from data extraction to their usage. This factor may have compelled some NGOs to engage with data when media organisations cannot.

In fact, the shift towards data may end up shaping the ecology of civil society, both at a individual level and as a whole. The fact that so many NGOs are already dedicated to transferring data skills, training others in data practices, creating data platforms and tools, organising conferences and championing data projects could support this idea. An example is presented by Prest:

There is an organisation, called The Key, which (after the experience of working with data) has changed its strategies and hired a full-time data scientist. And now in every meeting, they ask themselves ‘What does data tell us?’ This transformation may be taking place in other organisations.

Cabra is the lead journalist behind the coverage of one of the biggest leaks in history, the ‘Panama Papers’. A total of 376 journalists in 70 countries, working for a handful of media organisations, were necessary to analyse 11.5 million documents and 214,488 transactions, in which at least 140 politicians and high-ranking officials were involved (The International Consortium of Investigative Journalists 2016). She says this undertaking was a technological challenge, which had to be tackled with customised tools. This is an interesting case because, although journalistic, it exhibits some activist traits too. The project’s coordinator Marina Walker reveals the strategy behind the coverage: ‘Part of our model is that we all publish together. That’s because we want to create a commotion when we publish’ (2016). Although it does not explicitly make the connection, the ICIJ was attempting to change policy and practice with this well-timed effort; in which, in fact, it succeeded. ICIJ’s stories triggered official inquiries, resignations and changes across the world.

Summarising, the data infrastructure, combined with ICTs, has allowed civil society organisations to produce journalistic outputs where media organisations are unable or unwilling to do so, filling a gap. Three factors can compel NGOs to produce journalism: a perceived imbalance in the coverage of fundamental issues for advocacy; a shortage of data in some countries; and a lack of access to the abilities to use data. By stepping into journalism, NGOs are also highlighting factors linked with data agency.

Geoactivists and Others

This cluster groups the most creative initiatives, many times map based, so more space is dedicated to them. Sorting out actual cases of data activism is a challenging task. One difficulty is that some of the cases are organisations dedicated to several tasks concurrently, so they cannot be classified as purely data activist organisations (e.g. Civio). Meanwhile, in other instances, the case is an isolated data project (e.g. ‘Vidas Contadas’). Both institutions that practise proactive data activism and individual data activist projects are taken into account in this study. What follows is a categorisation of some initiatives, organisations and contents, establishing what unites them and what separates them. It is not intended as a comprehensive or normative effort, but as the basis for a model of helpful proactive data activism that can be useful to examine other instances of activism.

Particular emphasis is placed on critical cartography, which can be understood as ‘mapping the unmapped’ (MIT SLAB 2017) or as counter-mapping (Peluso 1995), but also as the theoretical critique of conventional cartography (Perkins 2008, 150).

Interactive maps provide a fertile area where most examples of proactive data activism can be found. They practise proactive geo(data) activism—‘geoactivism’ for short—offering interactive cartography for decision-making and action.

Geoactivism is not limited to humanitarianism. Organisations that put geoactivism into practice include ‘Vidas Contadas’, ‘España en llamas’ and a campaign set up by PAH. Pablo DeSoto calls this activity ‘the art of cartography of connected multitudes’ (2014).

In his interview, Gustavo Faleiros, founder of InfoAmazonia, expresses one of the reasons why people resort to cartography:

We use maps not only because they are beautiful but because they talk a language that people can understand and offer an effective communication. The language of maps combines layers of data with layers of stories, so better knowledge on deforestation is created ... Maps are in fact very powerful political tools.

The commonalities among most geoactivist examples can be grouped into three areas: they tend to rely on collective participation to generate data contributed by users and witnesses; they employ interactive maps for analysis, communication, coordination and action; and they aspire

to solve a social problem or generate support in an emergency. Of these three characteristics, the second and third are essential; however, proactive data projects can rely on other sources of data than crowdsourcing.

The campaign focused on illegal fishing, mentioned before, is an example of geoactivism that relies on public data extracted from a myriad of registries and satellite data on fishing vessels. ‘Death on the roads’ supports the global campaign against accidents involving cars, pedestrians and cyclists based on public data gathered in collaboration with governments channelled via the World Health Organisation. These distinctions are taken into account to analyse real cases.

Because of its potential to immediately improve the situation on the ground, the use of geoactivism in cases of crises has given rise to what is being called ‘crisis mapping’. That is, when geoactivism is applied to crises and used to support humanitarian efforts, then it can be regarded as crisis mapping. Interviewed for this study, Sebastian Mitchell differentiates between ‘crisis mapping’ and ‘activist mapping’³:

Crisis mapping is the act of receiving reports during a crisis or an emergency about a request or location of services and plotting them on a map. It is called crisis mapping because is quite a specific set of abilities that are needed in crises. Obviously, when a crisis occurs, the first 24–48 hours are very important. So you want people trained to deploy all the right information into the report ... Activist mapping is different. Many times it is not that urgent, although it can be if victims need help. But it is usually a longer-term activity, more focused on gathering bodies of evidence that can be used for lobbying and advocacy.

Ushahidi’s deployments are used in both areas. However, what can be understood as a *map* in light of data activism? The question is pertinent, as I started this study professing that the data infrastructure can be employed to chart complexity in a metamorphosing world.

No map can be so perfect as to build a complete image of the reality it is designed to represent, as the cartographers in Jorge Luis Borges’s tale yearned for. In Borges’s story ‘On Exactitude in Science’, the author tells about an empire where, seeking faithfulness, maps become as big as the territory they represent. It is a metaphor of the futility of total perfection

³ Mitchell was in charge of Ushahidi’s user interface design at the time of writing.

in science. The same way that numbers do not speak for themselves (Boyd and Crawford 2012, 666) and data are not raw (Gitelman 2013), ‘the map is not the territory’ (Korzybski 1994, 58).

Mapping has always been a political activity, the monopoly of states; and that is why ‘counter-mapping’ movements have emerged in resistance to governmental initiatives to hand over pieces of the commons to companies, for example in Indonesia (Radjawali and Pye 2015). ‘Challenging state power over maps and its categorisation of land uses by counter-mapping indigenous and local claims to territory has developed into an important movement in Indonesia’ (ibid., 4). As the authors of that study observe, one must ask who makes the maps, how people can access them and how can they be used ‘for emancipatory purposes’ (ibid.).

Counter-mapping can be just charting areas previously ignored. ‘Map Kibera’, for example, is an initiative that emerged in a neighbourhood of Nairobi to fill the blank spot it was until November 2009, when a group of Kiberans created the first digital map of their community.

Counter-maps involve bottom-up political processes in reaction to mainstream, conventional cartographic interpretations. The counter-mapping movement has used balloons and kites in the past and is currently using sensors, unmanned aerial vehicles (UAVs) and other independent means to generate data (Meier 2015).

Talking about the employment of drones in South Sudan and Syria by Amnesty International, Esteban Beltrán, Executive Director of that organisation in Spain, says in an interview for this study:

The need for data robustness and independence forces us to a higher technological level. Because who is the origin of the data? On whom you depend to gather them? Our autonomy leads us to ask those questions. If we are genuinely independent, we need to be able to collect data independently.

To define what a map is DeSoto, who studies the cartography of the 15M movement in Spain, refers to the *rhizome*, a concept taken from botany which means ‘root’, ‘stem’ and ‘branch’, and was used by Gilles Deleuze and Felix Guattari as an epistemological model. In rhizomes the organisation of different elements does not follow a hierarchical subordination; any element can be connected to any other element and generate new elements (Deleuze and Guattari 1987, 7–12).

Based on this concept, DeSoto understands cartography as ‘the identification of new components, the creation of new relationships and territories, new machines’, and a map as ‘action’ instead of representation (2014, 361). This model seems adequate to represent social movements and some data projects such as Ushahidi’s deployments.

Therefore, maps in the context of data activism are understood not as limited to the illustrations of a bi-dimensional geographic territory, but as knowledge and production tools, which represent complex situations, relationships and heterogeneous objects, social, political or technological processes, events and places, and mutable interactions and networks.

Counter-mapping initiatives in data activism abound. ‘Vidas contadas’—which means both ‘narrated’ and ‘tallied’ lives—is an example. It started as a data project during a hackathon, as hacker Alberto Labarga recalls in a workshop organised by Medialab-Prado (Vidas Contadas 2015). The purpose of the project is recovering the ‘historical memory’ of the victims of the Spanish Civil War and the subsequent dictatorship, through the integration of data, information, testimonies, websites, registries and physical memorials. It tries to bridge different repositories, making them searchable in the four Spanish official languages (Spanish, Basque, Galician and Catalan). ‘Much of this work, gathered after a monumental, collective and years-long effort, serves as a basis for visualisations and interactions’ (ibid.).

I have included it as a case of geoactivism because the project consists of interactive maps showing where human remains and mass graves linked with the Civil War and Franco’s repression have been found. Its leaders also are activists, who demand that the Historical Memory Law, a bill proposed by the Socialist Party when it was in power, is adequately budgeted and implemented. The conservative Popular Party, who succeeded the socialists in 2012 and had voted against passage of the law, arguing that it would reopen old wounds, has been reluctant to put it into effect, arranging no budget to implement it.

‘España en llamas’ (‘Spain on Fire’), another project facilitated by Civio and crowdfunded via the crowdfunding platform [Goteo.org](https://goteo.org), shows where and when fires happen, quantifies the loss of life and how much area was burnt, and estimates the damage, the resources employed to extinguish the fires, and reveals whether they were deliberate or not. The website also presents analysis, bringing attention, for example, to the fact that 91% of the fires in Spain are premeditated or due to human error, and that previously there was no unified record compiling the sentences related to forest fires (García Rey and Garrido 2016). After nine months

of work, Civio developed ‘the most comprehensive database of both official or unofficial court sentences around forest fires in Spain’ (ibid.).

PAH employed the Ushahidi platform for its ‘Stop Desahucios’ (‘Stop Evictions’) campaign, tackling the same issue as the Anti-Eviction Mapping Project does in the US. ‘Stop Desahucios’ visualised crowd-sourced information about dislodgements taking place, and issued warnings to mobilise people. At the peak of the financial crisis in 2012, Spain—with a population of 47 million—endured an average of 517 evictions per day (Diario Jurídico 2012). Millions of families acquired their homes during the years of the property bubble; however, when the 2007 crisis hit the country, they were left exposed. Unlike most of the US, Spain does not recognise mortgage loans as non-recourse debt. Since during the crisis property prices dropped enough for most foreclosures to account for only 60% of the loan, evicted people continued being responsible for large debts on property they no longer owned. The ‘Stop Desahucios’ campaign was created by hacktivists at tomalaplaza.net (literally ‘take the square’) and was associated with the Indignad@s protests. By law, there must be one day between the eviction being published and executed; in the meantime ‘Stop Desahucios’ would issue an immediate alert and the network of solidarity would try to prevent the removal of the family from their home. This proactive data activist project has a robust confrontational element.

There are many geoactivist initiatives within the global anti-eviction movement. Another example is the already mentioned Anti-Eviction Mapping Project, which documents ‘dispossession’ in the San Francisco Bay Area (Anti-Eviction Mapping Project 2016), supported by CARTO. It includes maps, testimonies, pictures and narratives on the issue, gathered partially via crowdsourcing. For example, it created a map visualising the locations of evictions related to the use of a certain state law (the Ellis Act), which gives landlords the power to expel residents and has been linked to gentrification. The initiative also organises mobilisations.

The illegal fishing project, led by ODI, was conceived from the start as a proactive data activist effort. Illegal fishing, a contributor to over-fishing, has reached catastrophic levels in some regions: many fish stocks are in decline, and some species are being pushed towards extinction. The project is focused on the western African coast. Tracking signals from vessels points to suspicious activity: widespread fish transshipment occurring in some cases in areas where this operation is prohibited (Daniels et al. 2016).

The advent of inexpensive portable satellite navigation devices and the availability of aerial photography and data from commercial and government sources make some proactive data activist projects possible. The platforms that sustain cartographic services deserve some consideration.

CARTO is a Software-as-a-Service (SaaS) cloud computing platform that provides GIS and web mapping tools. Its software was released in 2012. This Spanish start-up raised US\$7 million from a consortium of investors in 2014, and in 2015 it received another US\$23 million in the second round of financing. Since its creation, CARTO has provided a platform to organisations and companies, such as Nokia, Google Trends, Deloitte, *The Wall Street Journal* and Twitter.

Tomnod (in Mongolian ‘big eye’) was an initiative employing crowdsourcing to discover places and things in satellite images.⁴ It utilised CARTO and Google Earth to ‘solve real-world problems’ (Tomrod 2016). In 2010 it was a research project at the University of California; three years later, Tomnod was acquired by DigitalGlobe. Tomnod used online map interfaces that engaged people in viewing and tagging a section of a large area, for example to identify ‘downed trees’ and ‘damaged buildings’ in the tornado that hit Oklahoma in 2013. In 2011, Tomnod cooperated with the UN High Commissioner for Refugees, together with the Standby Task Force—a global network of trained expert volunteers working together online to assist in crises emerging from the Ushahidi experience (Standby Task Force 2016)—to locate refugee camps in Somalia.

OpenStreetMap, known as OSM, is like the dream of Borges’s cartographers: a collaborative initiative to create a free editable map of the world with as much detail as its contributors can provide from the ground. Data are collected by volunteers implementing systematic ground surveys using instruments such as a global positioning system unit, a digital camera and a voice recorder. The data are then entered into the OSM database. The maps show several layers of information, displaying for instance humanitarian facilities (OpenStreetMap 2017). Created in the UK in 2004, it was inspired by Wikipedia in reaction to proprietary cartographic platforms. Since then, it has grown to over two million registered users. OSM’s free map data has been used for humanitarian aid and economic development. A Humanitarian OpenStreetMap

⁴Tomrod is no longer operative.

Team (HOT) was created in the aftermath of the Haiti earthquake, as a US non-profit, registered as a charitable organisation in 2013 (The Humanitarian OpenStreetMap Team 2017).

Forensic Architecture is a ‘research agency’ based at Goldsmiths, University of London, which publishes critical spatial and media investigations on behalf of human rights organisations and environmental justice groups (Forensic Architecture 2017). Apart from the ‘Left-to-Die Boat’ project mentioned earlier, Forensic Architecture has investigated drone attacks in Pakistan and Gaza, analysing shrapnel fragments and ballistic and shadow projections, and plotting them on three-dimensional maps (*ibid.*). This organisation explores how buildings are destroyed to explain what happened, often contradicting the official explanation, exposing state violence, war crimes and human rights violations.

These schemes are proof of the excitement around maps used in projects focused on development and humanitarian issues.

An interesting angle that can be used to classify data activist cases is to look at where organisations and initiatives get their data from, because most of them tend to specialise in one or two data-collection routines. For example, ICIJ has relied on public and whistle-blowers’ data, while ODI often resorts to public and datafied primary and secondary research. As has been said, big data are mostly generated and amassed by governments and companies, while obtaining data (most of the time small data) is not so easy for NGOs, thus the methods to generate and access data can be very creative.

Based on this perspective, five groups can be identified, from the organisations that devote less effort to acquiring data to those that resort to the most complex methodologies, not bearing in mind how arduous analysing the data may be. They can be organisations that become recipients of data via whistle-blowers (e.g. WikiLeaks); produce new analysis from available, but unrelated and unexplored, datasets (e.g. the anti-FFS campaign); generate the means to crowdsourced citizen-contributed data (e.g. the deployments of the Ushahidi platform); appropriate data (e.g. via MobileMinner); conduct primary research whose findings can be datafied; or deploy data-collecting sensors, drones and other devices (e.g. InfoAmazonia).

What follows is a brief review of some of these categories. I do not include all those mentioned earlier to avoid dwelling on areas that I have already explored.

The ODI and Oil Change International (OCI) FFS campaign is an example of research based on publicly available data. The sources of this project include G20 countries and analysis circulated by organisations including the World Bank, Greenpeace, International Monetary Fund, British Petroleum, Carbon Tracker Initiative, Deloitte, *The Economist*, the BBC, the *Financial Times* and Reuters, among others. The merit of projects such as the FFS initiative resides in surfacing data that may have been hidden, integrating unrelated datasets, asking novel questions and finding new relevant information buried in repositories, as well as fashioning the resulting analysis for policy reform and communicating it effectively.

Relying on crowds to gather data is another method employed in data activism. Mills highlights this:

Citizens' contributions to science are part of a new trend that links research and action. There was massive scepticism about whether citizens could generate better maps than governments. The struggle is the validation of data, and creating confidence in crowdsourced data is taking off ... Crowdsourcing can be extremely helpful.

Although verification is essential, the key is the concept of *crowds*. Crowds can be leveraged as knowledge generators, sources and communities (Pawlak and Ricci 2014). Ushahidi has mastered crowdsourcing. Crowds are used in Ushahidi deployments as knowledge generators (e.g. allowing people to geotag reports), sources (e.g. crowdsourcing services to support the disaster response) and communities (e.g. the Standby Task Force). However, as seen in the example of the Indonesian drones, crowds can be analysts and verifiers as well.

Discussing the challenges of aerial imagery analysis and the virtues of utilising crowds to deal with the vast numbers of pictures obtained by drones, Meier calls the process of using crowds to analyse data 'human computing', as opposed to machine computing or artificial intelligence (Meier 2013), echoing an epoch when women were the 'computers' (Light 1999).

The analysis of drone-based images and video files entails a different set of challenges in comparison with tackling text, as Congosto (2016)—talking about pictures on social media platforms—and Meier (2015)—discussing drone-enabled aerial imagery—point out. The study of Twitter content is increasingly demanding as text is disappearing and more messages are shared in the form of pictures, infographics and

videos. Meanwhile, ‘aerial imagery captured during a single 20-minute UAV flight can take more than half-a-day to analyse’, so it has become ‘a big data problem’ (Meier 2015). The way to overcome this difficulty is to combine ‘(crowdsourced) human computing, machine computing and computer vision to make sense of this new big data source’ (ibid.).

An example is the MicroMappers project in Namibia, aimed at sorting aerial photos looking for rhinoceroses, which congregated 500 volunteering ‘digital rangers’ over one weekend (Sutter 2014). Involving crowds to analyse the images served to ‘survey more land more quickly than on-the-ground rangers could’ and to protect rhinos from poaching (ibid.). In other words, crowds can be not only a source of data, but also a source of analysis, and the demand for data analysis in activism is getting more complex as content becomes more visual.

Crowdsourcing can be considered an informational resource for crisis response and post-conflict recovery by allowing citizen participation in governance processes, enhancing democracy (Bott and Young 2012, 47). Luis Hernando Aguilar, a knowledge management expert and former member of the UN Office for the Coordination of Humanitarian Affairs (OCHA) Colombia team, interviewed for this study, says that crowdsourcing is grassroots democracy in action.

The challenge in crowdsourcing data does not come from its technical sophistication, but from the availability of crowds and the convening power of the project for which the data are being used. That is, the capacity of the deployers to generate or find a motivated crowd is crucial. As will be seen in the case study, Ushahidi’s deployments have accumulated some failures due to the absence of crowdsourcers submitting reports, transforming maps into ‘dead maps’ (Vota 2012).

When crowds are forthcoming, crowdsourcing is advantageous vis-à-vis the granularity and complexity of the data too. For example, there are three main advantages of leveraging crowdsourced data for disaster assistance (Gao et al. 2011, 11). The first is the immediacy of data collection, which can result in quasi-real-time assistance if applied to emergency operations; a second advantage comes from the macro perspective that emerges from crowdsourcing, which allows humanitarian agencies to envisage the whole picture with high fidelity and to prioritise tasks; and the third advantage comes from the micro perspective: since witnesses can send out information from any platform or device, relief organisations can ‘accurately locate specific requests for help’ (ibid.).

A case of a civil society organisation mixing crowdsourcing and other approaches to generate data is Bellingcat, a website that offers video, maps and picture investigations to journalists and activists. Created by Eliot Higgins in 2012, it adapts open source intelligence for investigative citizen journalism and activism by tracking weapons appearing in pictures and videos shared via social media networks.

In 2014, this organisation became famous by suggesting that it was the Russian military who struck down Malaysia Airlines flight MH17 in Ukraine, after analysing the pictures and videos published in social media (Bellingcat 2014). Bellingcat uses a different type of crowdsourcing though. At Ushahidi, reporting witnesses deliberately contribute data for the relief efforts, while the crowds utilised on Bellingcat have no idea how their pictures are going to be used, as the project relies, for example, on selfies taken by people watching a military parade and shared via social media. Apart from the Malaysia Airlines case, Bellingcat has provided evidence on the Syrian war and the 2014–2015 Russian military intervention in Ukraine, among other issues.

Syria is precisely the focus of the Syrian Archive, which includes content from social media as well as other sources of information, and verifies it using a trusted network of activists and ordinary people on the ground (Syrian Archive 2017). The site then categorises and maps the information as ‘use of illegal weapons’, ‘unlawful attacks’, ‘violations against specifically protected persons and objects’ and so on. Based in Berlin, it boasts 4162 pieces of ‘verified digital content’ out of more than one million elements ‘collected digital content’ at the time of writing (ibid.). Its objective is to document visually everything that happens in Syria so that human rights groups can bring cases forward based on real evidence in the future (ibid.).

Another way of obtaining data is to grab them. Data and metadata exchanged on social networks are seized by service providers, who may not share them with their originators. In some cases, they do share some data. For example, Twitter offers some information that can be analysed using its application programming interface (API; Twitter 2016). Anyone can use the Twitter engine to search for a particular hashtag to find information on who is talking about a particular issue, with whom and what they say.

But what happens with the data that companies do not want to share? Jennifer Pybus, Mark Cote and Tobias Blanke promote the appropriation of data using tools such as MobileMinner, which ‘allows you to track

the trail of data your Android device leaves behind you' (Mobileminer 2017). These authors talk about the use of this tool, which they created, and highlight the 'data-making possibilities' that exist if users could unearth 'what data controllers, such as Facebook, monetise' (2015, 1). They assert there is an 'untapped potential' in the data generator who wishes to be in control of his or her data (ibid., 8).

The appropriation of data merits some attention because it is controversial. In the context of medical data, for example, Jérôme Béranger warns against the risks of making specific data available without understanding their 'primary use context', which may include distortions in the interpretation process (Béranger 2016, 39). Incidentally, Jeni Tennison differentiates between open data and data sharing, which is 'providing restricted data to restricted organisations' (2014). Sometimes shared data are restricted because they provide a revenue stream and are only available to people who will pay for them, or because they are sensitive (e.g. medical records; ibid.). While there are data within the public sector that should be open, other sensitive data should only be shared judiciously, or not at all (ibid.). However, Pybus, Cote and Blanke do not talk about medical records or sensitive data when they defend data appropriation.

Scraping data—or extracting data in a way that usually mimics human exploration—from websites is a cheap way to collect data, but legally a grey area. Companies use scraping to improve their competitive intelligence, but try to block others from doing the same to their websites. For instance, to verify data reported by witnesses, Ushahidi resorts to scraping social media. However, there is no consensus about whether this is acceptable or not. Pablo Hoffman thinks it is legitimate as long as scrapers do not 'crawl at a disruptive rate' and do not attempt to gain any unauthorised entry to websites' services or their clients' information (2015). However, Desai Heena thinks that the legality of scraping hinges on different factors and legal advice is recommended to evaluate concrete cases (2016). Some websites put effort into preventing the scraping of their data by barring it in their online terms of service; but if scrapers have not registered in advance, it is uncertain whether courts would impose online terms against users who have not agreed to them (ibid.).

What type of data should be held privately or made public is a contentious debate. While sensitive data should probably remain private, public data should be open by default. There is a growing sector dedicated to developing software and strategies to protect private data against cyber

fraud, while businesses and governments are still to embrace open data. Then again, I am less concerned about the prospect of a hacker appropriating my data than about unknown corporations and governmental agencies having access to and sharing my data for secret purposes beyond my control. Furthermore, I daresay that appropriation could become an area of action in the future for proactive data activists, since it is already a part of advocacy campaigns and a space of action where reactive data activists have accrued some experience.

Finally, the generation of primary data is possibly the area where the most exuberance can be found. It can include data from surveys and sensors as well as aerial imagery produced by so-called community drones.

From environmental research to wildlife conservation, drones are becoming progressively standard for a variety of applications beyond business and defence (Drone Code 2016). Their utilisation in humanitarian assistance is growing to the point that there is a Humanitarian UAV Network that boasts ‘well over 2400 members’ (UAViators 2016). UAVs are employed in data collection, interactive cartography, cargo delivery and communication services.

However, not all UAV operations have been welcomed. For example, Guy Oliver denounced the UN Organisation Stabilisation Mission (MONUSCO) in the Democratic Republic of Congo for proposing to the humanitarian community in 2014 that drone platforms could be shared with the military for information gathering, since the principles of neutrality, which allow relief organisations to work as insiders, were compromised (2014). Others paint a brighter picture of this operation. The UN drones were used not only for surveillance, ‘but also to hover at low altitude in full visibility of hostile fighters, as a deterrent’ (Leetaru 2015). However ‘mass rapes, killings and other atrocities’ have been committed by both rebels and government troops (BBC 2012), while Kalev Leetaru does not mention whether drones can also pre-empt abuse committed by government troops. Who controls the drones and for what purpose are vital questions here.

To counterbalance maps created by governments favouring the interests of business elites, unorthodox initiatives exist. Counter-mapping was described by Nancy Lee Peluso in 1995 as a unique twentieth-century phenomenon, made possible by both technological development and the thrust towards participatory politics (1995, 400). This activity emerged in Indonesia as a response to decades of intensive industrial timber exploitation and ‘the Indonesian government’s superseding of customary

forest rights through official planning' (ibid., 384). It took the form of 'sketch maps', which formalised the claims to forest territories by villages that had traditionally managed them (ibid.). In a challenge to top-down initiatives, these efforts appropriated 'the state's techniques and manner of representation' (ibid.).

Counter-mapping efforts have been reinforced by the data infrastructure and other technologies, which make it easier for NGOs and local groups to challenge the misappropriation of rights to resources and land. Counter-mapping puts people at the forefront of content production, similarly to citizens' media (Rodríguez 2001, 2009), and reinforces communities' monitorial power.

Critical cartography is present in some cases that have been mentioned, such as the PAH anti-eviction campaign or Bellingcat. Counter-maps represent a sharp criticism of conventional narratives, including when mapping the unmapped, like in the case of Kibera. Another example is the Ushahidi Haiti Project Map (see later Fig. 4.1). Although it was not its primary objective, the deployment plotted parts of the country that had remained uncharted thus far, highlighting the lack of interest that vulnerable populations incite (Meier 2012). Forensic Architecture's chart of the Saydnaya prison, near Damascus, employed architectural and acoustic modelling and is based on former prisoners' experiences of detention. Saydnaya is a place where torture and executions are performed routinely on political prisoners, who are kept in the dark (Amnesty International 2017). In 2016, Forensic Architecture met Saydnaya survivors to chart the sounds from their memories on a map, which is not flat, but spherical in a McLuhanian sense, since it is a 'multisensory and multidimensional space' (McLuhan and McLuhan 1992, 18). These examples challenge official versions of events, placing mapping power in the hands of the people.

Other ways in which data organisations are gathering data independently include sensors. One example is Rede InfoAmazonia, which connects a network of sensors managed by local communities via mobile phones 'capable of monitoring physical and chemical parameters that help indicate whether the water is contaminated' (Rede InfoAmazonia 2016).

Finally, data are also being collected by organisations as a way to safeguard activists. Facial recognition systems are being applied to verify a protester's identity from images captured by cameras during demonstrations and direct actions. This is why some organisations have developed tools both to gather data and to protect the identity of participants.

Guardian Project's CameraV is a software application to 'capture and share verifiable photos and video proof on a smartphone or tablet, all the while keeping it entirely secure and private' (Guardian Project 2016). This type of software allows organisations to gather data and metadata, which can be used as evidence of violence against protesters, for example, turning 'metadata from a surveillance risk into a method for the production of public proof' (van der Velden 2015, 1). InformaCam works by allowing the user to manage metadata from image and video files, to make mobile phones become 'context-aware' and to store the metadata (*ibid.*). These techniques allow activists not only to collect data, but also to enact a form of sousveillance.

Recapitulating, proactive data activist organisations employ a variety of methods to generate data. Some of the most exciting include organisations using public but unconnected repositories to make new discoveries (e.g. ODI/OCI's FFS campaign), facilitating crowdsourcing to gather and analyse data (e.g. 'Stop Desahucios'), mixing methods to produce alternative narratives (e.g. Bellingcat), confirming information via scraped data (e.g. Ushahidi), using drones to provide counter-maps (e.g. Micromappers in Namibia) and deploying sensors (e.g. Rede InfoAmazonia) and cameras (e.g. CameraV).

Most of the projects mentioned so far are indeed the product of an alliance. The plethora of organisations and initiatives involved in hectic collaboration around social and humanitarian projects shows just the enthusiasm that data are generating in civil society.

One example is the International Data Responsibility Group (IDRG), launched in 2015 as a global network of experts and organisations dedicated to exploring the standards required for data management in the context of humanitarian action, sustainable development and justice (The International Data Responsibility Group 2016). IDRG—with its motto 'people first in a digital age'—is supported by the University of Leiden, Data & Society, Data-Pop Alliance, The Engine Room, GovLab and the UN's Global Pulse.

The Digital Humanitarian Network (DHNetwork) is a 'network-of-networks' whose purpose is to leverage digital networks to support a humanitarian response, by forming a platform of volunteer and technical communities and providing an interface between formal humanitarian organisations and informal expert volunteer networks (2016). Members include some already mentioned organisations, including Sahana Software Foundation, Statistics Without Borders, HOT,

Disaster Tech Lab, Standby Task Force, CrisisCommons, DataKind, Translators without Borders, Info4disasters and Geeks Without Bounds, among others.

There are many more examples, such as C40Cities and Data-Pop Alliance. Data are the glue linking cities in the C40Cities project, a network of megacities committed to addressing climate change (C40Cities 2016). Data-Pop Alliance is ‘a global coalition on big data and development’, which includes the Harvard Humanitarian Initiative, MIT Media Lab, Flowminder Foundation and ODI, bringing together researchers, experts, practitioners and activists to promote people-centred data (Data-Pop Alliance 2016).

Next, the attributes associated with proactive data activism are examined and linked with the classifications offered in this chapter.

THE ATTRIBUTES OF PROACTIVE DATA ACTIVIST ORGANISATIONS

Proactive data activist organisations tend to work in alliances (e.g. either big data sets are too large or social problems are too complex to be dealt with by a single individual). ‘Works in alliance’ seems to be a feature of proactive data activists. But what else can be said about them?

Eleven attributes emanating from real cases have been identified here as the most frequent, and codes have been assigned to each of them. To determine the concentration of the characteristics in each case, I have set up a range, from 1 to 3, in which 3 is the maximum. Then, I compare the findings with the classifications offered before to determine what attributes are more frequent for each type of proactive data activist organisation. All proactive data activist organisations examined are granted values for more than one feature, indicating that although they tend to specialise, they have no qualms about crossing lines separating areas of action. The non-assignment of a value means the attribute is absent.

The results are shown in Table 3.2. The usefulness of this exercise is that when comparing an organisation that ‘works in alliance’ with another that does not, distinctions can be made. This type of categorisation allows the extraction of multifaceted reflections too. For example, if an initiative is totally dedicated to transferring skills (value level 3), sometimes provides funds to catalyse the creation of data projects (value level 2), occasionally generates data visualisations (value level 1) and often provides

Table 3.2 Intensity of attributes in proactive data activist initiatives (*Source* Elaboration by the author)

<i>Organisations</i>	<i>ST</i>	<i>DJ</i>	<i>DT</i>	<i>FR</i>	<i>DAP</i>	<i>DV</i>	<i>AC</i>	<i>OD</i>	<i>RA</i>	<i>MM</i>	<i>CP</i>
DataKind	3			1	1		3			3	
Kiln-Data Visualisation	1	2	2		2	3	1			1	2
Civio	1	3	1	2	3	2	3	2	2	2	3
Greenpeace		1		1	1	1	2		3	1	3
ICIJ	1	3	1	2	2	2	3	1	1	2	1
Morlan	1	3					1				
InfoAmazonia	2	3	1		1	3	2	3	1	1	2
Medialab-Prado	3	1		1	1	1	2			3	
Environ. News Lab	3	3				3	1	3			
ICFJ	3	3					1			2	
Oxpeckers	3	3				3	1				
Bayers Impact	3		3	1	1	1	2			2	
School of Data	3	1	2	1	1	1	1			1	
Tactical Tech	3		1	1	1		2			2	3
Code for Africa	3	1	1	3				1		2	
Data4Good	2				1					2	
Data Science for Social Good	3			1	1	1	2			2	
eScience Institute	3			1	1	1	2			2	
Hacks/Hackers	3	3	1		1	1		1		3	
ODI				1	2	2	2				3
Social Brite	3		1						1	1	
Gap Minder		2				3			1		1
Vidas Contadas		1			3	3	1	2	1		2
España en llamas		1			2	3	1	2			3
PAH		1			2	3	2	1	3		3
Death on the Road		1	1		2	3	2	2			3
Take Back the Tech						3	1		3		3
Ushahidi			3	1	3	3	3	2			1
NY BigApps				3							
Google Flu Trends						3					
Comprehensive Knowledge								3			
Archive Network											
OpenSpending								3			
Knight Foundation	2			3							
WikiLeaks		3			3				3		2
ViveloHoy		3							1		1
Internews	1	3		2		1	2				
Community drones in Indonesia	1				3	3	1		3		3
Outliers Collective					2	3	1				
Vizzuality					2	3	1				
CARTO		1			2	3	1				

Notes ICFJ, International Center for Journalists; ICIJ, International Consortium of Investigative Journalists; ODI, Overseas Development Institute; PAH, Platform for People Affected by Mortgages

match-making opportunities between organisations (value level 2), it can then be categorised as a ‘skills transferrer’ that also is something of a ‘catalyst’. This is the case for DataKind.

The attributes are ‘produces skills-transferring activities’ (code ST), ‘produces data journalism content’ (DJ), ‘generates data tools and platforms’ (DT), ‘provides funds or resources’ (FR), ‘creates proactive data activist content’ (DAP), ‘produces data visualisations’ (DV), ‘works in alliance or collaborates often’ (AC), ‘offers open data’ (OD), ‘shows reactive data activism leanings’ (RA), ‘provides match-making opportunities’ (MM) and ‘engages in campaigning exercises’ (CP).

Although there is an element of arbitrariness in the selection of the cases and the allocation of a number to indicate intensity, the results of this exercise show coherence and confirm the robustness of the classification of proactive data activist initiatives.

The most frequent attributes in proactive data activism include producing data visualisations, transferring skills, working in an alliance, producing data journalism, practising proactive data activism and resorting to advocacy. The less common characteristics include fund-raising, reactivity and creating data platforms and tools. This makes sense. In the current early phase of proactive data activism, transferring skills seems to be a necessary activity as organisations learn to utilise the data infrastructure. Data activist organisations’ missions include tackling immense challenges too, so they tend to collaborate. In some places, traditional media organisations are not producing data journalism, and NGOs are stepping into fill the gap.

Figure 3.1 shows the correlations that can be established within attributes (the darker the square, the stronger the association between two attributes). The objective here is to learn whether there are certain features that are more strongly associated than others. The analysis shows that there is a strong correlation between skills-transferring (ST) and match-making (MM) activities; that is, organisations that focus on transferring skills are often committed to making connections among organisations. In fact, the organisations classified as skills transferers include those dedicated to transferring data or social science skills, generating tools and match-making opportunities. An example is Medialab-Prado, data skills transferrer and match-maker. Code for Africa, Data4Good, Data Science for Social Good, eScience Institute and Hacks/Hackers could be included in this hybrid group showing both attributes.

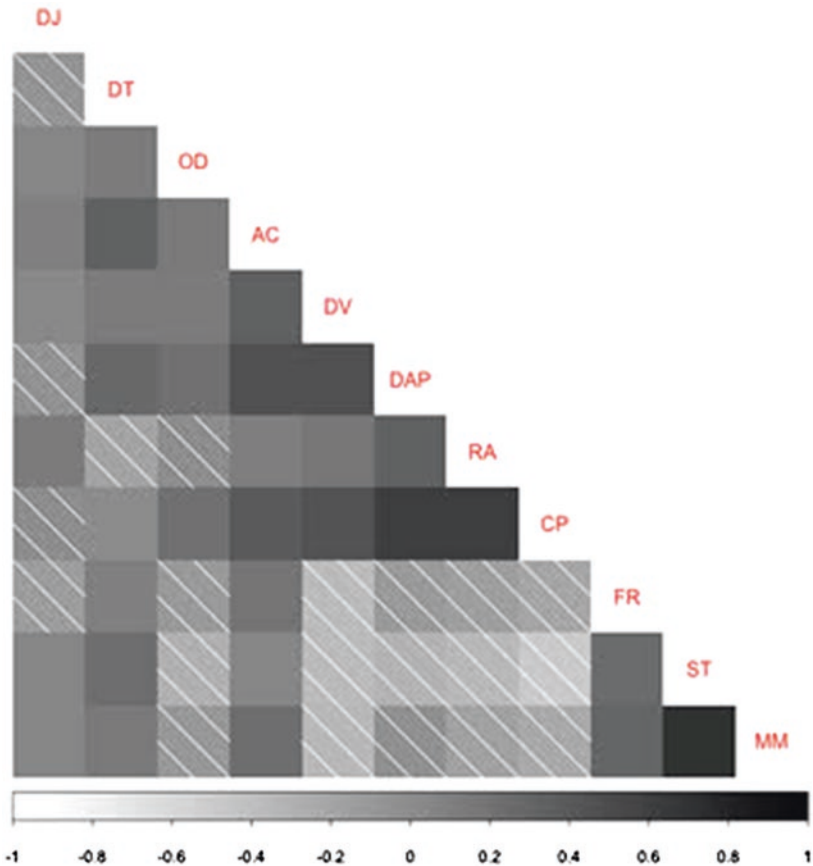


Fig. 3.1 Correlations among proactive data activist attributes (*Source* Elaboration by the author)

There are correlations between the production of data activist projects (DAP), working in an alliance (AC) and campaigning and advocacy activities (CP). That is to say, organisations that generate proactive data outputs frequently partner with others and engage in campaigning. Examples of these organisations include Civio and its data projects (e.g. ‘España en llamas’), Greenpeace, ODI, initiatives such as ‘Vidas contadas’ and, to a lesser extent, Ushahidi.

Another relationship exists between being reactive (RA) and having a campaigning nature (CP). Examples include Greenpeace, PAH, Take Back the Tech, WikiLeaks and the Indonesian drones project, since they resort to protest and data-based advocacy to generate social change.

Finally, producing data activist outputs (DAP) also shows an association with generating visualisations (DV), since most data activist organisations resort to visualising their data in one way or another. Examples include Ushahidi, Kiln-Data Visualisation, InfoAmazonia, Oxpeckers and ‘Vidas contadas’.

Underneath these experiences is an empowering process that is unleashed in data activism, which is explored in the next section.

THE EMPOWERING CAPACITIES OF DATA

The state methods of public control—that is, propaganda, censorship and surveillance (apart from violence)—have been amplified and strengthened by big data. At the start of this study, I also asserted that the data infrastructure allows a metamorphosing world to be tackled from a democratic perspective. Democracy is about participation (e.g. in decision-making processes) and equal opportunities, justice, voice and access for all. This access can be understood as power and the process of getting that access as empowerment. Data employed in activism can trigger empowerment processes, as they offer the possibility to overcome forms of exclusion and allow people to decide and act. However, as with ICTs, we should be careful about ascribing emancipating properties to technologies—the data infrastructure included—in all circumstances; it depends on who controls them, under which conditions and for what.

The data infrastructure, drones and other data-gathering devices have not only enhanced the powers of corporate and government surveillance, but also the opportunities for proactive data activism. As has been said, counter-mapping is an example. Land grabs associated with mining and palm oil monocultures—since 1990, Indonesia has seen a 40% decline in rainforests and a 600% increase in palm oil plantations (The Goldman Environmental Prize 2015)—are rampant in Indonesia (Radjawali and Pye 2015, 5). Community drones have been used to gather high-resolution spatial data and generate counter-maps in areas ‘where access was restricted by company security and police’ (*ibid.*). The results of these efforts include the government’s acknowledgement of some ancestral domains in 2012, and the usage of drone footage as legal evidence in a

Constitutional Court trial in 2014 to prove that mining companies were not observing regulations (DataShift 2015).

Although it is not a magic bullet, and needs to be combined with campaigning and political pressure, the use of community drones proliferated in Indonesia at a time when there was a political opportunity to reclaim parts of the forest. What can be inferred from this example is that the employment of drones to generate counter-maps is an empowering activity that allowed communities to appropriate both data and land rights through maps: an arrogation process that happened in the realm of the digital and the physical concurrently. Thus, the knowledge extracted from data analysis became not only an advocacy element to be combined with others, but also a form of material power.

In this section, I address the issue of the emancipatory powers of the data infrastructure applied to activism in an attempt to describe the processes that it can unbridle, which could be compared to what Rodríguez described for citizens' media: the application of the data infrastructure to activism results in 'transformative processes that alter people's sense of self, their subjective positioning and therefore their access to power' (2001, 18). Key concepts here are 'action' and 'agency', 'control' and 'participation', and I examine these more in detail next.

Hereafter, agency in the context of data activism is to be understood not as simple acts (e.g. clicking on a button), but as lengthier processes of action based on reflection and understanding the world to act within it (Couldry 2014, 13). Here agency is not to be comprehended as blind, but as cognisant and teleological; as a communicative action, in which the actors are bestowed with cognitive and volitional abilities. But to harness these faculties, people must have access to information and tools and must be able to act. That is why 'agency is deeply connected to the distribution of knowledge and power' (Baack 2015, 1). This is a concept close to how Innerarity understands knowledge as a tool for democratic participation. Many of the examples of data activism examined earlier are about people accessing information, not just to be aware of it, but to be capable of using it.

Exploring the 'location of agency' in big data, Kennedy, Poell and van Dijck suggest that power lies in an early stage: datafication (2016). As seen in the case of initiatives aimed at the independent appropriation and generation of data, data do not emerge *ex nihilo*, but arise from a gathering exercise framed in a specific political, ideological, scientific and socioeconomic context. Some data activists wish to generate

their data on their own terms and within their own frameworks, exercising power by doing so.

Data power, therefore, can include the ability to frame data's extraction and engender alternative forms of datafication. So far, social science has mostly ignored this form of agency, but 'debates about data power' should acknowledge that data can also be produced, assembled and analysed by 'alternative actors' (Kennedy et al. 2016, 1), as is the case, for example, with InfoAmazonia's 'Annual cycles of the indigenous peoples of the Rio Tiquié'. This is a spherical calendar that chronicles the life of indigenous communities, based on crowdsourced data. The visualisation includes several coatings of information that overlay time measured in the Gregorian calendar and time measured in the calendar of the communities of the northwest Amazon. It constitutes a shared space of dialogue that puts Tukano people in contact with the rest of the world, and vice versa (Cardoso 2015).

The values behind this kind of agency come from preceding social movements engaged in human and political rights, the open source ethos, the tenet of the embryonic internet and the hacker culture. Activists in the open movement 're-articulate notions of democracy, participation and journalism by applying practices and values from open source culture to the creation and use of data' (Baack 2015, 1). Stefan Baack observes three transformations derived from this experimentation. First, by deeming data as a precondition for knowledge, activists go from sharing and writing code to sharing data, breaking the monopoly of governments and corporations, and allowing people to produce their own understanding of data (ibid.). Second, activists connect, scale and extrapolate this idea to a flexible form of representative democracy by applying the open source model of engagement to political participation (ibid.). Third, acknowledging that mediators are essential to make data accessible, activists also try to transform journalism to become an intermediary (ibid.) and regain its natural role.

Power can shift from brawn to brain, from north to south and west to east, from old corporates to start-ups, from dictators to people in town squares and cyberspace (Naim 2013, 14). However, what are the principles under which data activism can unleash these democratising processes? Although, as far as I know, nobody has yet articulated the values of data activism, a look at internet rights could help develop them, in the same spirit that the open movement inspires data activism.

The Dynamic Coalition on Internet Rights and Principles has transferred universal rights from the physical world to the internet, to

include ten core rights and values. These can be reworded to obtain the principles of data activism, which I propose here: universal dignity for all in a datafied environment; human rights and advancement of social justice; equal rights to the means to generate data, and to access to and use of the data infrastructure; open data without censorship; private data protection; respect for life, liberty and security; cultural and linguistic diversity; universal and open access to data, free from discriminatory prioritisation, filtering or control on commercial, political or other grounds; open standards for the data architecture, and human rights and social justice as the legal and normative foundations on which data are governed (based on Internet Rights and Principles 2017).

‘Practice’, as in ‘data practice’, evokes the hands-on approach of grassroots groups in promoting reform from below of the communication and data systems. ‘Emancipation’ in light of data activism denotes the promise to shape, share and redistribute technical knowledge and to extend to non-experts the possibility of controlling communicative actions, bypassing commercial and state-owned platforms. Emancipation is strictly linked here to the notion of empowerment, seen as ‘freedom to’ communicate in one’s own terms and lack of restrictions. In this sense, as emancipatory communication spaces, the alternative digital public spheres generated by data activism could be seen as spaces for people to enact their democratic/data agency.

Although emancipatory practices are not new, the range and self-sufficiency of some of these experiences today are unparalleled. Liberated technologies signify a ‘reconfiguration of power through prefigurative action’ and expansion of ‘unregulated spaces’ (Milan 2015, 120). The importance of emancipatory practices is twofold: on the one hand, they propose possibilities for participation in civic life; and on the other, their prefigurative realities are the forerunner of a fairer mediascape (ibid.). Paraphrasing Milan, the data infrastructure facilitates people’s emancipation, augmenting the scale, autonomy and self-sufficiency of data activists, and enabling the determining, sharing and redistribution of technical knowledge among non-experts, who thus take control of communicative actions and channels.

Collaboration can be a source of empowerment as well. Mitchell, referring to data crowdsourcing in successful Ushahidi deployments, points out how powerful it is to hear one’s voice vibrate with hundreds of others. That is, the strength of the numbers is the source of empowerment as well. Alejandro Portes and Ruben G. Rumbaut observe the

power that individuals find in the collective in a hostile environment (Portes and Rumbaut 2001, 60). Although these authors talk about communities of immigrants living in the US, some of the cases examined earlier exhibit these qualities as well (e.g. PAH). Explaining the success of InfoAmazonia, Faleiros says in his interview:

there are other factors (than the technology or the content), such as the network; that is why we identify media organisations that can be partners. We are not interested only in our own content, we also aggregate content from other partners, trying to make information accessible and visible to a wider public.

This collective power works best when social capital is strong and when activists act around shared values. Social capital ensures that a diversity of resources can be mobilised for a common goal; a level of peer control is in place that penalises transgressions; trust among its members guarantees the action is transformative and not mere a façade; cooperation is fostered to face tasks that exceed the possibilities of one individual; feasible objectives are generated; and internal communication systems are created that can be shared on equal terms (Barandiaran 2015). As has been seen, proactive data activist organisations tend to work in alliance, which makes these projects stronger.

In conclusion, empowerment in data activism comes in different ways. By socialising the data infrastructure, it serves as an equaliser, equips excluded individuals and groups with the tools to participate as peers, and enables cognisant agency. This agency can also be exercised in new, alternative ways of datafication, allowing new actors to generate data on their own terms (Kennedy et al. 2016). The data infrastructure further allows large-scale autonomy and self-sufficiency (Milan 2015). Empowerment comes too from the individual and collective values embedded in data activism, which emanate from the social movements involved in human and political rights, the open source ethos and the hacker culture. Encouragement can be originated in co-creation, collectiveness and shared goals; that is, in the strength found in acting in association with others and strong social capital.

So far, I have explored the emergence of data activism, and the distinctions between reactive data activists and proactive data activists. I also examine it from different perspectives: proactive data activism can be thought of as a communicative action; is comparable to different

varieties of journalism because of its analytical nature, political stance and collaborative character; places citizens at the vanguard of content production, altering the relationship between people and the data infrastructure; is local and transnational, based on collaboration across borders; works towards lasting change and gathers people around the use they make of technology; and facilitates monitorial citizenship and generates alternative digital public spheres.

In this chapter, I propose a tailor-made categorisation that allocates cases of proactive data activism to four groups: skills transferrers; catalysts; producers of journalism; and data activists and geoactivists. A second classifying exercise looked into how data activists gather data. From this angle, cases can be divided into five categories: recipients of data via whistle-blowers; those that produce new analysis from available, but unrelated and unexplored, datasets; organisations that get data via crowdsourcing platforms; those that seize data; and organisations that generate data autonomously. Finally, the empowering and emancipating processes unleashed by using the data infrastructure were explored, discovering commonalities with past social movements and causes.

In the following chapter, I examine the case study in light of the proposed classifications.

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Crowdsourcing and Mapping Data for Humanitarianism

Abstract Combining communication and data infrastructures with interactive mapping and data crowdsourcing capabilities, Ushahidi was launched in Kenya in 2008. It filled a gap in the mediascape, mapping electoral turmoil and violence when there was no information available. The initial Ushahidi team expanded, requested the help of techies around the world to improve the platform and in 2010, with the Haiti deployment, Ushahidi became known as a global emergency facility, revolutionising humanitarianism. Since then, it has been employed in major crises and disasters globally. This chapter applies the classification of proactive data activism and concepts described in Chapter 3 to examine Ushahidi. It also scrutinises the organisation's failures and lessons learnt, to help develop a model for effective proactive data activism that can be applied to other initiatives.

Keywords Ushahidi · Data crowdsourcing · Crisis mapping
Activist mapping · Digital humanitarianism · Disasters

The surplus of information during disasters and crises—called ‘big crisis data’—can be as disorienting as the lack of information. In fact, making sense of crisis data has always been a challenge for humanitarian organisations. Utilising a crowdsourcing platform, gathering citizen data and corroborating and visualising the resulting information on interactive

mapping software, the Ushahidi platform offered in 2008 the possibility of generating hundreds of confirmed and tagged reports within hours of a catastrophe. Ushahidi is a pioneer of digital humanitarianism (Hesse 2010; Meier 2015).

Since the deployment tackling the Haiti earthquake in 2010, crisis-mapping technology has emerged as a tool to help humanitarian organisations understand and prioritise data, as well as deliver assistance. An independent evaluation found that the Haiti deployment (see Fig. 4.1) addressed ‘key information gaps’ in the early period of the response before large organisations were operational, by providing situational awareness and critical information with high degree of geographic precision, supporting small responses so they could adjust their target needs and facilitating the action of private citizen actors (Hesse 2010). Both the theory and the practice of humanitarianism have been transformed by this development.

Ushahidi fits the description of a proactive data activism organisation: it makes pivotal use of the data infrastructure, utilises interactive maps



Fig. 4.1 Ushahidi Haiti project map (Source Ushahidi Staff 2017)

and other technologies to mobilise people and generate identities, and works within the logic of a theory of change (ToC; although this is not explicit in its vision). In this study, I inspect its strategy, repertoires of action, challenges, successes and failures to understand Ushahidi in light of data activism. The idea is to apprehend the rules guiding data-enabled social action, identify various pressures that surround data activism and generate a paradigm that can be used in other cases.

ORIGINS AND HOW IT WORKS

The first phase in the growth of any organisation, according to Greiner's Growth Model, is developing through creativity (Exponential Training 2016). This is how Ushahidi got on its feet in 2008. Enthused by the examples of open software initiatives such as Firefox and Linux, once its mapping platform had been tested, Ushahidi invited the global programming community to develop software packages built on the open source code and perfect the prototype (Keim 2012). It was able to engage 125 of them (*ibid.*).

Right after the earthquake that hit Haiti in 2010, Ushahidi, Tufts University, OCHA Colombia and the International Network of Crisis Mappers collaborated in launching a deployment. Mobile technology played a significant role. The first days were chaotic: transportation was inadequate, lines of communication were broken, a few radio stations continued to broadcast, but only cellphones and smartphones worked consistently. During the earthquake, they became almost the only means of communication (Hesse 2010). A 'community of techno-humanitarian volunteers' coalesced around calls for help, and Ushahidi put its mapping platform to the task of collecting and plotting reports (*ibid.*). Within days, the platform was customised and a text message hotline established, and hundreds of global volunteers supervised texted reports of trapped people, emergencies and appeals for help, feeding the information into a map that aid workers could use. A total of 1500 reports were collected and mapped in the first two weeks (*ibid.*).

In the Haiti disaster, Ushahidi realised that local intelligence was vital. It had managed to engage expert volunteers, recruited mostly through social media from the Haitian diaspora. They customised the software to local needs and, more importantly, translated locale-specific references into and from Creole (Hesse 2010). This proved to be vital. However, Ushahidi had failed to engage the community that would be the primary

users of the platform: humanitarian workers (*ibid.*). This lesson was integrated into the organisation's guidelines.

The Haiti deployment was a catalyst for change in the humanitarian sector too (Owen 2015, 124–125). It was the basis for a new figure in humanitarian emergencies: the 'digital humanitarian' (Meier 2015), 'techno-humanitarian volunteer' (Keim 2012), 'humanitarian technologist' (Global Facility for Disaster Reduction and Recovery Labs 2010) or simply 'digital volunteer', as Aguilar calls them in an interview for this book. From 2010 onwards, these experts, often technical professionals with skills in GIS, knowledge and database management, social media and online campaigns, started applying their skills and gathering around platforms such as Ushahidi to deal with disasters.

To ensure that the effort around the Haiti project could be replicated elsewhere, Ushahidi helped set up the Standby Task Force, an independent mapping community of trained expert volunteers who are ready to participate in a crisis immediately after it is declared, and before a more significant community assembles (Standby Task Force 2016). In contrast, when UN agencies need to depend on volunteer networks, they summon the volunteers, training and deploying them on a case-by-case basis, says Aguilar. The Standby Task Force was launched and tested in 2010 in a drill exercise dealing with an earthquake affecting Bogota, together with the local Fire Department, International Search and Rescue Advisory Group and OCHA Colombia, prompted by Aguilar.

In 2011, OCHA invited Ushahidi's collaboration as the Libyan civil war intensified in March in creating the Libya Crisis Map to provide situational awareness of the evolving situation, because the UN did not have physical access to the country or the idle capacity to harvest, authenticate and administer the enormous amount of available online information (Verity 2011).

Andrej Verity, OCHA's Information Management Officer, says there are three core areas of this collaboration that have influenced this UN agency: the speed of producing and dealing with information in the early phases of an emergency; the good coordination between the information management teams at OCHA and the self-organised volunteers; and the culture change that comes from using non-UN standard software (e.g. Skype) to be able to work with external volunteers (Verity 2011).

In 2013, MIT nominated Ushahidi among the smartest companies generating breakthrough technologies. By then, the countries that had used Ushahidi the most were the US, Italy, the UK, Canada,

Russian Federation, India, Indonesia, Mexico, Australia, Brazil, Germany, Colombia, Egypt and Spain, among others (Leson 2016). Ushahidi launched a new version of its software in October 2015 and, after six months of research, in June 2016 it introduced a design improvement.

By 2015, Ushahidi declared yearly growth in revenues of about 60%, resulting in 30% of its overhead being covered by paid client services, primarily through consulting projects (Manning 2016). In 2016, it received a US\$1.5 million grant from the Global Development Lab (part of the US Agency for International Development; Ushahidi 2016a). By then, Ushahidi had raised about US\$4 million (*ibid.*). This was a critical threshold for the organisation's sustainability, since initially its 'informal, networked structure' did not conform to the organisational model funders were comfortable with (Bernholz et al. 2010, 24). Nevertheless, in his interview, Aguilar says that Ushahidi 'has stopped being a citizen's initiative to become a company a long time ago'.

Financial support comes from Humanity United (which awarded a kick-off US\$200,000 grant) and the Omidyar Network (which in 2009 gave the non-profit US\$1.4 million; MIT Technology Review 2016). Other funding partners are Cisco, Ford Foundation, Hivos, Google.org, Humanity United, MacArthur Foundation, Rockefeller Foundation, Knight Foundation and USAID. Customers include the ICT4Peace Foundation and the World Bank (Keim 2012). Ushahidi works in partnership and collaborates with iHUB, m:lab, Gearbox, Standby Task Force and AkirachixiHUB, HOT, the Harvard Humanitarian Initiative, Translators without Borders and The Assessment Capacities, among others.

Ushahidi has been deployed in every emergency or conflict around the world, expanding to developed countries and non-violent issues, for example 'Snowmagedon', deployed during the 2010 snow storm in Washington (Ushahidi 2017a); the evictions crisis in 2011 in Spain (15M Tetuan 2011); and the anti-corruption campaigns in Brazil, Morocco, Indonesia and Kosovo, among others (Were 2015). Other key deployments include the Chile earthquake (February 2010); the Kenyan referendum (August 2010); the Libya crisis (starting in early 2011); the Syrian crisis (starting in April 2011); the Kenyan general elections (March 2013); typhoon Haiyan in the Philippines (November 2013); the Ebola crisis in West Africa (starting in December 2013); the Nepal earthquake (April 2015); and the Ecuador earthquake (April 2016).

By 2017, Ushahidi boasted 120,000 deployments, 10 million testimonies and 25 million people reached in critical situations (Ushahidi 2017a).

How does it work? Witnesses submit reports by text message, email or web post; these reports are verified; and the software helps aggregate, organise and tag the information into a map and a timeline. The launchers/managers of the deployment (deployers) can categorise and validate the information so it is more helpful to users on the ground, who can prioritise and strategise their efforts. In 2010, Ushahidi developed the Swift River platform, which uses machine-learning algorithms to obtain and prove information from emails, text messages, blog posts and tweets (MIT Technology Review 2016).

Today, Ushahidi offers a variety of commercial services. A US\$99 monthly fee gives organisations additional access to surveys, five users, SMS and Twitter data collection, bar and line chart visualisations, and the possibility of importing and exporting data. A US\$499 monthly fee adds twenty users and the option of customisation, among other features. More complex adaptations cost more and are dealt with on a case-by-case basis, but grassroots projects can apply for a tailored pro bono plan (*ibid.*). Ushahidi also issues user manuals with guidelines on how to set up and configure a deployment, how to manage people and data, and how to visualise and analyse the data.

Any organisation or community willing to launch a deployment can have free access to basic features on the Crowdmapper facility, including unlimited posts, one survey, one user, web and email data collection, and map and timeline data visualisation (Ushahidi 2017a). Ushahidi works under a Lesser General Public License (LGPL), which means anyone can download the source code and create their own implementation. The open source code that powers the latest version of Ushahidi is available at the collaborative development platform GitHub.

Ushahidi's own involvement in deployments can be nil, since anyone can launch one (e.g. a 'Burger Map' set up in the US in 2011); it can provide some support so the deployment is customised (e.g. 'Ayuda Ecuador', in which Oduor was involved); or it can lead the deployment (e.g. the electoral initiatives in Kenya in 2008, 2010, 2013 and 2017).

The staff has expanded from the initial core team to about 30 employees at the time of writing. None of the original team members is still in the executive team, although Rotich, Kobia and Hersman are members of the board (Ushahidi 2017a). However, each deployment depends on the number of volunteers and reporters the organisation can muster.

So who are these digital humanitarians? They can be divided into three types: expert humanitarians who work within formal organisations;

expert volunteers working pro bono; and witnesses reporting and using the information on the ground. The first two categories usually fill the role of deployers (who initially launch the application of the platform) and supporters, or experts backing the effort remotely.

How do they work together? An example is Ayuda Ecuador in 2016. The platform was set up right after the first tremors. Deployers included people from several organisations around the planet. The idea was to generate data collectively about threats, logistical needs and responses, and channel the efforts via different institutions (Ayuda Ecuador 2016). The deployers used an OpenStreetMap map powered by Ushahidi, where they plotted reports. Ayuda Ecuador showed reports from 16 April to 5 May 2016, categorised as ‘emergencies’ (a total of 61), ‘trust-worthy reports’ (53), ‘threats’ (62), ‘logistics’ (294) and ‘responses’ (254),¹ among others. Each of these categories offered subcategories indicating action or places. For example, ‘responses’ was divided into ‘housing’, ‘health services’, ‘search and rescue’, ‘refuge’, ‘food distribution’ and ‘water distribution’, among others.² A review of the overall humanitarian effort, including other map-based initiatives, offers a favourable view of the response (Albán 2016).

Whatever the impact of individual deployments, a small African start-up had revolutionised humanitarianism and is now part of initiatives managing multimillion-dollar projects. Nathaniel Manning, interim executive director of Ushahidi, says that this ‘unique’ institution has always been a ‘trend-setter and norm-breaker’ that ‘has changed the paradigm of expectation more than once’ (2016).

Typically, institutions dealing with the socioeconomic factors of a crisis replace humanitarian organisations once the emergency is over. But Ushahidi is being employed in both areas: for crisis mapping to deal with disasters; and for activist mapping to gather evidence that can be used in advocacy. The Kenyan 2008 elections deployment is an example of the first type of undertaking, since the application was launched to deal with the post-electoral violence, not to campaign for democratic development (although this notion is embedded in the deployment). Other Ushahidi deployments, such as ‘I am Nirbhaya’, are focused on campaigning on

¹ ‘Emergencias’, ‘informes verificados’, ‘amenazas’, ‘logística’ and ‘respuesta’.

² ‘Alojamiento’, ‘servicios de salud’, ‘búsqueda y rescate’, ‘refugio’, ‘distribución de alimentos’ and ‘distribución de agua’.

human rights issues, in this case about violence against women and children in India (I am Nirbhaya [2012](#)).

Ushahidi deals awkwardly with this dichotomy. Its role as an emergency, participative facility is clear. But Ushahidi collaborates in concrete deployments (e.g. Ayuda Ecuador) and occasionally launches its own deployments, developing a long-term strategy that is typical of campaigning organisations. On its own initiative, for example, Ushahidi built on the 2008 experience to support the monitoring of the Kenyan constitutional referendum in 2010 and created the Uchaguzi platform, which was later employed in tracking of general elections in Tanzania (2010), Zambia (2011) and again in Kenya (2013 and 2017).

Ushahidi shows other activist traits. As della Porta and Diani note, it is often the case that a hybrid model of network organisation combines formality with elements typical of a loose network structure ([2006](#), 159), a framing that suits Ushahidi's evolved self. Rewording della Porta and Diani, this model of organisation is based on the independence of single components, their horizontal integration and the flexibility of their goals and strategies. They practise decentralised ways of organising and can include relatively bounded organisational forms, such as the Climate Action Network, and whole movements, such as the environmental movement (*ibid.*, 160). When Ushahidi supports or launches deployments, it engages in similar distributed ways of organising with a social goal.

Network organisational models are helpful to coordinate efforts around specific issues in which large numbers of volunteers collaborate, and they do so while being neither entirely reliant on the organisation that initially launched the deployment nor capable of exercising control outside their sphere (della Porta and Diani [2006](#)). Rephrasing della Porta and Diani, Ushahidi fits the description of a network organisational model, because it allows flexible, participative mediation to happen, linking the participatory ethos behind grassroots organising and the coordination afforded by more formal structures. An example is the 2013 Ushahidi deployment in Kenya, which was set up by Uchaguzi with the collaboration of several institutions (Hivos, Canadian International Development Agency, USAID and Kenya Red Cross, among others), together with volunteers (Ushahidi Staff [2015](#)).

It works like this: observers, volunteers and witnesses report to Uchaguzi any voting-related incidents through digital channels made available purposely; these reports are received by hundreds of volunteers

who structure, georeference and verify them; and the reports are then visualised on a map, timeline and stats board, and shared with officials for organisations to respond when necessary (Omenya and Crandall 2013). Citizens can sign up to receive alerts based on location, keyword and timeframe at Uchaguzi too (*ibid.*).

Many network organisations are intrinsically provisional; that is, they do not outlive the specific mobilisation they are supposed to coordinate (e.g. Ayuda Ecuador); some of them can become independent entities with a distinct identity. This last possibility explains Uchaguzi—as a permanent electoral monitoring tool for citizens, civil society, election observers, law enforcers and humanitarian agencies—which was the result of the deployment launched in 2010 outliving that event.

The uneasiness with which Ushahidi sits at the intersection between crisis and activist mapping emerges when confronted with the question of whether it has formulated a ToC. For example, according to Mitchell, the reason behind Uchaguzi is the following:

Elections are an important and integral aspect of democracy, meant as a mechanism with which citizens hold their leaders to account for past actions and future promises ... When citizens are enabled to actively contribute to an environment in which a free and fair election can take place, it will become less attractive for politicians to meddle in elections and stimulate the emergence of truly citizen-oriented politics.

This skeleton of a ToC is taken to another level with an additional notion: ‘When citizens see that their voices can make a difference, it will become more attractive to be politically engaged’, so that ‘serious incidents would be relayed to those who could act upon and solve them’ (Ushahidi Staff 2015). An evaluation of the Kenyan 2013 election says that Uchaguzi’s strategy was to work towards democratic stability in the country by increasing accountability through citizen participation in electoral processes (Omenya and Crandall 2013). Thus, Uchaguzi is not only about adding voices to the overall assessment of an electoral process or about creating alertness to incidents; Ushahidi’s ToC, however implicit, includes the promise of (re)action.

A decade after the slaughter that followed the 2007 presidential elections, turmoil continues to haunt democratic processes in Kenya. The Supreme Court took the unprecedented decision to annul the results of the 8 August 2017 vote, cancelling the victory by incumbent President

Uhuru Kenyatta and calling for fresh elections, but challenger Raila Odinga decided to withdraw from the repeat election (Kerry and Toure 2017). Several people died in clashes. That is to say, even if ToCs are articulated and achievable, results are not guaranteed.

Besides, specific ToCs are enunciated in most deployments. In the case of the Ushahidi Haiti project, the declared theory was: ‘Access to accurate and timely information from the ground during post-crisis response periods will enable humanitarian responders to act more efficiently’ (Ushahidi Staff 2011). The intrinsic problem identified here is that the immediate reaction to a crisis is not always efficient for lack of actionable information, and there is a need to increase the usefulness and timeliness of crisis data for rescue operations.

I believe that Ushahidi has a double nature, and has evolved from facilitating alternative chronicles to being an organisation that supports hybrid aims, following in other organisations’ footsteps. Despite the obvious differences, and with all due caution, Oxfam and Ushahidi could be compared. Oxfam—originally the Oxford Committee for Famine Relief—was founded by Quakers, social activists and academics in the Second World War to channel aid. Soon, its mission became to persuade the British government to allow food relief beyond the Allied blockade. Mixing lobbying and action, Oxfam developed into a hybrid fast enough by mixing humanitarian programmes on the ground and advocacy. Ushahidi has stridden a parallel path: it was created initially as a response facility and has become an organisation that facilitates citizen-generated content for activist mapping as well.

Next, Ushahidi is examined from various perspectives to determine what type of data activist organisation it is.

USHAHIDI SEEN FROM DIFFERENT PERSPECTIVES

Resembling other data activist endeavours, Ushahidi includes teleological, norm-regulated and dramaturgical elements; that is, it facilitates communicative actions. The analytical element can be spotted in the gathering and verification of data generated by people affected by a crisis.

A hermeneutic process places this analysis in the sociopolitical context of the crisis that the initiative is tackling. The simple act of putting the information on a map makes this a political endeavour too, as any representation of the world involves sociopolitical constructions and Ushahidi maps often challenge top-down narratives. These maps are not

bi-dimensional geographic representations of territory, but knowledge and production tools signifying complex situations (e.g. a crisis), relationships and heterogeneous objects (e.g. a place experiencing a lack of water), social or technological processes (e.g. the location where the evaluation of humanitarian needs takes place), events and places (e.g. a donation point), as well as mutable interactions and networks (e.g. the ad hoc teams of experts and non-experts contributing their skills in a deployment). Because of what they do, Ushahidi's maps are political 'action' instead of just representation.

The dramaturgical element is present in the interaction of the team of deployers and volunteers with the witnesses and other humanitarian workers, as well as other participants (e.g. authorities, journalists).

That is, Ushahidi initiatives involve communicative actions, since they include a purpose, are framed and refer to a normative system, and incorporate messages, which employ subjective language to engage people.

Like in other data activist projects, the values of the fairness and accuracy of sound journalism are embedded in Ushahidi's makeup as well (Milan and Gutiérrez 2015). Relying on data without adequate fact-checking in situations of violence or emergency can lead to skewed or falsified information and inflamed passions (Smith 2008). That is why Ushahidi established authentication mechanisms, and offers users a Guide of Verification, including advice, for example, to include only data coming from multiple sources (Ushahidi Community Resource 2011).

Ushahidi's platform has been employed as part of journalistic practices as well. Examples are the 2009 coverage of Gaza by Al Jazeera; the BBC's coverage of the London tube strikes of 2010; and the *Houston Chronicle's* map showing the bad condition of the streets of Houston in 2011. Teresa Sandoval-Martín and Óscar Espiritusanto say that tools such as Ushahidi provide value in the communicative chain of news media organisations and generate a sphere of collaboration between professional and citizen journalists (2016, 458). These authors also observe that there is a 'massive externalisation' of tasks, which before were performed by journalists, through the use of digital tools such as Ushahidi, which then become assimilated into journalistic practices (ibid., 468). Namely, the use of Ushahidi, among other platforms, can enhance journalism.

From the perspective of international relations, Ushahidi deployments take the form of fleeting TANs, which facilitate coordinated action based on interactive cartography that renders crowdsourced data useful for

decision-making during disasters. Ushahidi complies with Steve Waddell and Sanjeev Khagram's TAN model: it is active globally; engages diversity; facilitates the creation of interorganisational networks; is a systemic change agent, as it has transformed the rules of humanitarian assistance; is a 'coalition of the willing'; and is a producer of public goods, generating transparency (2007, 263–265).

Like other data activist organisations, Ushahidi shows some characteristics of a social movement: that is, a network structure and social aims (examined earlier); the use of unconventional means; shared values as the glue inspiring action and network formation; and the generation of disruptions.

The platform innovated by utilising existing technologies (e.g. SMS, web posts) in a pioneering way to connect real-time reports of incidents on a live map. Once the model was tested and its value established, it expanded and was applied to other emergencies, challenging hierarchical institutions with entrenched practices, as happens with other unconventional technologies (Owen 2015, 7). Ushahidi defies 'the old analogue models of control and command' in conventional humanitarianism (Conneally 2012).

Its network structure also places Ushahidi in the social movement sphere, as seen earlier. Deployments depend on a network of expert volunteers that is quickly fashioned, connecting to victims and humanitarian workers. This is what Catherine Blackadar Nelson, Jeannie A. Stamberger and Brian D. Steckler call a 'hastily formed network', which is a rapidly deployable network that can be generated using a variety of different communication technologies (2011, 1). Boersma et al. talk about self-directed networks of heterogeneous stakeholders, including affected citizens, which constitute a new approach that is challenging traditional top-down forms of disaster management (2014, 125). As a result, disaster response and humanitarian organisations are gradually seeking to connect their operations with these platforms and many-to-many information streams.

Having common beliefs to support collective solidarity (della Porta and Diani 2006, 7) is another characteristic that Ushahidi shares with social movements. In Ushahidi deployments, a local cause triggers international solidarity that feeds support back to the local event (Grabowski 2012). Shared principles and a sense of belonging are behind some of its most successful deployments. An example is, again, the Haiti 2010 platform. Part of its accomplishment was the ability to rally dozens of

Haitian volunteers sharing concern and solidarity, who were crucial in translating information, since machine translation engines for Haitian Creole were not available at the time.

Ushahidi does not engage in protest, and therefore it is neither a reactive data activist organisation nor a beyonder. However, rephrasing Txetxu Aguado and Annabel Martin, Ushahidi shows how, in times of crisis and heightened systemic inequality, a group of people endeavour to find ‘alternatives to how things came to be’ and, through ‘hard questioning of the *status quo*’, create ‘better methodologies of analysis and critique’ for social change (2016, 165).

Mixing the thoughts of della Porta and Diani (2006, 174) and Thomas Kuhn (1970), Ushahidi is disruptive in that it obstructs the normal course of events and, in doing so, it has revolutionised pre-existing power structures and dynamics in humanitarianism through innovation, social progress and new ideas (1970). The Ushahidi Haiti Project, although not perfect, was part of a paradigm shift (Global Facility for Disaster Reduction and Recovery Labs 2010). The immediate results were saved lives, but the long-lasting consequences of proving ‘that open-source, participatory information gathering can work’ were not apparent immediately (Martin 2011). Years later, no crisis is tackled without some form of digital humanitarianism.

Ushahidi constitutes a challenge to hegemonic narratives and can be considered a manifestation of a *subaltern counter-public*, a concept proposed by Fraser as an expression of excluded groups forming their own public spheres (1990, 58–61). Ushahidi’s initial mission statement says that it intended ‘to change the way information flows in the world’ (HumTech 2016) by giving voice to the voiceless. Whereas before during crises information typically came from governments, UN agencies, big NGOs or even companies, Ushahidi allows smaller actors within civil society to decide ‘what aid is needed, where and by whom’ (Hersman 2010). It jeopardises hegemonic structures and accounts when it acts as an equaliser: anyone with a telephone or an internet connection can create and feed a Ushahidi map independently.

The alternative discourse facilitated by Ushahidi around emergencies is different from that emanating from decision-makers too. When Ushahidi was launched, Okolloh blogged that ‘the number of deaths being reported by the government, police and media is grossly under-reported’, while the true picture of what was going on came from family and friends in affected areas (2008). She hoped to put names to the

people who had disappeared in the post-electoral violence in such a way that they were not forgotten when the crisis came to an end (*ibid.*). Like alternative media, Ushahidi not only facilitates alternative conduits for content, but also prompts alternative content; like citizens' media, Ushahidi puts citizens at the forefront of content production.

This ability to create counter-publics constitutes a disruption as well. For example, in 2011 during the Arab Spring, in Egypt three Ushahidi maps were launched to tackle the elections, amendments to the constitution and 'civil resistance' by the Development and Institutionalisation Support Center (Zak 2011). The Egyptian regime was 'threatened by the (Ushahidi) technology because it challenges the *status quo*' (Meier 2011). Meier admits, though, that this challenge tipped the balance of power only marginally in favour of civil society (2012, 98). That is, disruption does not guarantee results, the same way that a ToC does not translate necessarily into change.

The impact of Ushahidi deployments, and other data activist activities, on the Arab Spring remains unclear. In an interview for this book, Hisham Almiraat, a medical doctor who was a leader of the Arab Spring in Morocco, says:

Unfortunately, our dreams were dashed, not entirely without our own faults: we were ill-prepared politically and badly organised. I remain very optimistic, however: maybe this region needed a civil war. Maybe we just couldn't skip that bloody transition before people can understand that theocracy is no solution. We will get there. No doubt.

Almiraat thinks that the role of data activism in the Arab Spring was that of a 'catalyst' by quickening things.

Data-based knowledge and ICTs—as vehicles for knowledge—can be socially equalising tools too. ICTs provide each activist with the same data, allowing them to become knowledgeable and disseminate knowledge, diminishing the differences between experts and non-experts (van de Donk et al. 2004, 150). By enabling people without formal education to determine how things are to be done (Rotich 2017), Ushahidi creates another tension: it has changed the game of humanitarian assistance, broadening the definition of who is an expert and placing non-experts at the vanguard of humanitarian efforts alongside experts.

Ushahidi signifies a test for traditional humanitarian operations and has forced them to adapt, as Verity suggests when talking about how OCHA has been transformed by its collaboration with Ushahidi (2011).

One example, again, is Ayuda Ecuador. One of the challenges was to feed information into traditional rescue operations, which had been happening in a fixed and somewhat arthritic way. Aguilar recalls that the relationship with humanitarian workers was challenging:

Civil servants are used to doing things in certain ways. They did not have the capacity to absorb 400 reports in two hours and incorporate them in their dynamics ... Meanwhile, in traditional humanitarian operations, a situation map can take a day to be put together.

Boersma et al. recommend that the strongly formalised management structures of the traditional relief agencies relinquish command-and-control approaches to increase their adaptive capacity, and capitalise on citizen-based information generated in networks (Boersma et al. 2014). Nevertheless, with exceptions such as the collaboration between OCHA and Ushahidi, the two ways of understanding humanitarianism can clash.

Lucy Bernholz, Edward Skloot and Barry Varela explain such a clash like this: Ushahidi's 'disruptive philanthropists' operate outside the existing regulations that apply to traditional humanitarian agencies; seek solutions, not monetary gain; and rely on new models of peer-to-peer accountability (2010, 42). Disruptive philanthropy is implemented by network-enabled volunteer groups that are radically different from 'enterprises with bylaws, mission statements, formal boards of directors and geographical limits' (ibid., 37). Andy Rice even suggests that Ushahidi threatens the aid organisations' funding model, as it exhibits a higher degree of transparency (Hersman 2010).

However, no Ushahidi deployment is a replacement for humanitarian agencies working on the ground, and although Ushahidi is a non-profit, it does not mean it is cost free. But Rice has a point in suggesting that digital humanitarianism reveals where aid is flowing and where it should be going transparently.

Gathering data and publishing maps were once the privilege solely of the state; another disruption comes from the counter-maps Ushahidi produces. Meier says that Ushahidi enables a form of live-mapped sousveillance, 'a participatory digital canvas' for civil society (2011). It challenges the state monopoly of maps, which is something often seen in geoactivism.

Ushahidi enables people's monitorial citizenship when it allows ordinary people to engage critically in issues that affect them, generate their own versions of events on a regular basis, participate in politics and get involved in action.

It also generates alternative public spheres, where people from different communities can exchange information across borders on equal terms. An example is the Ayuda Ecuador coordination interface, using the collaborative platform Trello, where the egalitarian relationship between the actors involved in launching and coordinating the deployment can be observed in action (Ushahidi Ecuador 2016).

USHAHIDI'S BRAND OF PROACTIVE DATA ACTIVISM

Ushahidi is endeavour that shows some traits of the skills transferrer, match-maker and catalyst, since it seeks to transfer skills through training and form alliances, as well as facilitate activism by providing resources. Its chief attributes include that it produces proactive data activist content and maps, focuses on creating tools for humanitarianism, works mostly in collaboration with others and occasionally engages in advocacy.

As seen, proactive data activists do not conform to the description of the beyonders; they are more concerned with enhancing and acting than with shielding or protesting. Oduor says that her organisation 'encourages more collaboration (with authorities)'. Ushahidi was created to fill a gap, not as a rejection of a social evil. A social challenge is embedded in this gap-filling, but protest is not at the heart of Ushahidi's vision. Oduor puts it like this:

Ushahidi is a non-profit organisation which builds software that enables marginalised groups to raise their voices ... Our mission is to ensure that people's voices are being heard, and that decision-making is enabled for positive action in cases of disaster and crisis. We do this by changing the way the information is flowing, so it has a more bottom-up approach, by activating participants, and by leveraging technical tools, so that people can have access to information and decision-making processes.

Ushahidi deployments exemplify how citizen data are generated and maximised for geoactivism. It profits from Gao, Barbier and Goolsby's advantages of crowdsourcing data (2011, 11). First, the immediacy of data collection allowed, for instance, the Ushahidi Haiti deployment to be launched just two hours after the earthquake hit Haiti, and shortly thereafter 'organisations were able to borrow an SMS short code phone number (Mission 4636) to send free SMS texts' (ibid.). Instantly, news of the free emergency number spread, and within days the nearly

real-time reports allowed relief organisations to respond to urgent cases in a timely fashion (*ibid.*). Second, as crowdsourcing tools can amass and analyse data sent from numerous unstructured methods, and categorise them into thematic bins which can be prioritised, humanitarian agencies can then focus on the matters that seem most urgent (*ibid.*). For example, in any Ushahidi map rescue operations can be directed to the geographic areas where there is a higher concentration of geolocalised reports. Third, since Ushahidi reporters can send information from any platform and device, providing each report's particulars, relief organisations can target specific requests for help.

To power early warning systems for humanitarian response, crisis mapping applies different tools. Some of Ushahidi's repertoires of action include geolocalising news reports; translating text messages and categorising information to facilitate understanding between victims/reporters and assistance providers; scraping social media sites for crisis-specific keywords (e.g. visualising tweets that have a specific designated hashtag so a comprehensive picture of an emergency situation emerges); and locating refugee camps, buildings, roads, water distribution, evaluation points and logistics on aerial imagery (Parker 2015). Ushahidi was among the first to use these tools for humanitarian purposes.

Its repertoires of action are important as a unifying element, nourishing a feeling of identity. Collective identity among expert volunteers working remotely can come from shared objectives and values, but it is also created around the tools and methods they employ to achieve those goals (Grabowski 2012; Milan 2013). It is no coincidence that the labels that identify these volunteers include the words 'digital' and 'techno'.

Ushahidi is a geoactivist endeavour which has created a crowdsourcing data platform to visualise data contributed by people for activism and humanitarianism, and which occasionally engages in advocacy. Within geoactivism, Ushahidi deployments generate data via crowds, and scrape data from websites to verify information as well. Ushahidi has been a pioneer in crisis mapping. This also translates into forms of empowerment, which are explored in the next section.

THE POWER OF THE CROWD

The empowering process stimulated by Ushahidi comes in different ways, and one of them is the muscle of numbers, or what Mitchell calls the 'power of a crowd saying the same message'. One thing Ushahidi

team members do when speaking at events is to ask people in the audience to say things that come to their heads individually; then, they ask the audience to say the same things all at once. Mitchell comments:

If many, many people are saying the same things at the same time, the message is very, very loud and very clear, much louder than it would ordinarily be. So we really think that ability to enable people to say the same messages at the same time and have their voices heard collectively and shared with the world is empowering to groups.

When facing a disaster, in the middle of the chaos, the individual gets encouraged by knowing he or she is not alone. From being a mere map where an electoral crisis was georeferenced, Ushahidi has been transformed into a social solidarity network. Its maps are as transient as the concrete team fostered around a specific disaster, but the Ushahidi community constitutes a substratum that can be latent and reactivated, a little like Milan's karst river movements, which remain concealed, reappearing merely when the conditions require it (2013).

Another way in which people can be empowered is cognisant agency. Victims of disasters are not passive or ignorant; on the contrary, evidence shows that an important factor for disaster readiness is not technology or logistical means, but people's experience of having been hit by a catastrophe before (Overseas Development Institute 2017). As in other data activist endeavours, Ushahidi can generate awareness and practical knowledge that fosters people's collaboration.

Ushahidi allows alternative forms of datafication that empower people in a way that lets them make sense of the world in order to act on it, in Nick Couldry's words (2013, 13). The top-down datafication process is upturned when people and organisations obtain, generate and use data in Ushahidi's deployments. By transforming *victims* into proactive reporting *witnesses*, the asymmetrical, political and economic dimensions of the production and distribution of data (Pybus et al. 2015) are reversed. This action augments their agency not only as individuals but as a community (ibid.).

This process is democratising too. Using Ushahidi deployments, people exercise their responsibility, solidarity, civic sense and awareness of community belonging, values that constitute the makeup of democracies. 'Every post, text, photo and video is made visible on a map, empowering people to use this primary sources to create their own multiple narratives' (Multiple Journalism 2008). Oduor explains:

Everybody who participates feels that a little text has gone a long way in creating awareness and improving decision-making. This is an empowering experience without a shadow of a doubt.

In a McLuhanian interpretation, Meier thinks that these technologies make us more independent and human, as they can translate our first emotions of sadness and concern into practical action (2011, 2015). As has been observed, the data and communication infrastructures used in Ushahidi's deployments allow for emancipatory practices at an unprecedented scale, and with unparalleled levels of autonomy, which signify a reconfiguration of power and disruption for traditional, top-down humanitarianism.

Next comes a reflexion on the lessons learnt at Ushahidi.

CONTROVERSIES AND LESSONS LEARNT

Each Ushahidi deployment requires enthusiastic cooperation and buy-in, careful adaptation of the platform to the local situation and verification of the information, as well as the protection of the individuals providing it. The integration of lessons learnt is vital too. These issues are the source of the tensions examined in this section.

Numerous Ushahidi deployments have been set up and then abandoned (Slater 2016). Many people launch a deployment without studying how cartography can support their campaign, just because the platform has attracted publicity and is easy to install (*ibid.*). Before attempting any deployment, both Heather Leson (2016) and George Chamales (2017) recommend that groups start by asking first what a map can do for them.

A 2012 quantitative analysis indicates that, based on about 13,000 deployments using the free Crowdfunder facility, 93% had fewer than ten reports, while 61% had not been customised or used at all (Internews 2012, 3). The study finds that about 16% of the users who launched the map felt that they could not generate the required public awareness to make it as effective as they had hoped (*ibid.*, 6). Commenting on this report, Meier highlights that by 2013, the number of deployments had grown to 36,000 (2013a), and Ushahidi reports 120,000 deployments at the time of writing (Ushahidi 2017a). Meier suggests that Ushahidi should update the analysis to shelve criticism, but to my knowledge it has not been repeated.

Ushahidi combines analysis, interpretation and emotion, which is required to generate reporting crowds and expert volunteers. Failure to motivate communities of users for each deployment prompts a ‘Dead Ushahidi’ map (Vota 2012). Wayan Vota published in 2012 a visualisation showing all the Ushahidi maps that had not attracted reports. ‘Dead Ushahidi’ includes maps such as ‘Honduras Health Mapping’, ‘Elections Cote d’Ivoire’ and ‘Wildlife Tracker in Kenya’, among 30 others. These maps contain few reports in comparison with the relevant population.

Using crowdsourcing tools without strategies and field work is a recipe for failure (Vota 2012). The non-expert users who report the data depend on sound media outreach and dissemination strategies typical of advocacy organisations. The Ushahidi platform includes manuals and advice for developers on how to attract crowds using social networking, phone messaging and blogging, build a community, reach out to the media, seek associates and produce calls to action, but these suggestions are not always implemented or fruitful.

As has been seen, expert volunteers are fundamental. Ushahidi’s endeavours in Kenya count on the deep roots and connections the organisation has with networks of techies and activists. However, this is not the case everywhere. Community building and co-working spaces, where policy-makers, developers and civic hackers can gather, are fundamental. Deployments characteristically entail the following tasks: decision-making, project management, development and customisation of the application, data management, post gathering and submission, and replying to posts in the field or virtually. All of these responsibilities need people behind them.

For platforms to work successfully, an engaged activist community, a degree of democratic freedom and timely adaptations have to be in place beforehand. Ushahidi operated well during Kenya’s elections because of the maturity of Kenyan bloggers, who possess considerable technological skills (Ekin 2012) and relative liberty to operate. In contrast, the Ushahidi deployment for the DR Congo elections in 2011 was a failure. Although other factors may have been at play (Ruffer 2012)—the DR Congo ranks 154th of 180 in the World Press Freedom Index (Reporters Without Borders 2017)—Okolloh admitted that the lack of proper localisation and adaptation of the deployment contributed to the fiasco (Ekin 2012).

Buy-in among humanitarian agencies working on the ground is a challenge. Barriers to use of the information provided by the Haiti deployment included the discrepancies between the dynamic event data

syndicated by the platform and the often stiff information requirements of traditional responding organisations (Morrow et al. 2011). This disconnect continues to be a challenge today. During the earthquake in Ecuador, Aguilar says that it was difficult for local authorities to accept the reports sent to the platform and integrate them into their efforts. Aguilar explains:

The local rescue experts who respond to the emergency may ignore the role digital volunteers are playing in a crisis. When some of these guys, who may have been working in crises for twenty years, hear the word ‘volunteer’, they imagine the typical ‘emergency tourist’ who takes pictures, raises funds for his or her own cause and gets back home contributing nothing to the overall effort.

Addressing mistrust and misinformation in situ is therefore vital too. The lack of localised guidelines to customise the platform was an issue as well. Aguilar recalls:

In ‘Ayuda Ecuador’, we did not find manuals and recommendations in Spanish to share with the volunteers, or the materials were not easily replicable. We found some stuff in Spanish, but it was scattered.

Having access to correct information in a crisis leads to targeted actions. If crisis maps are based on a collection of reports from different sources, there has to be a system for verification that can stand up to scrutiny. Ushahidi founders realised this was the case and a method to confirm eyewitness testimonies was implemented (Smith 2008). Although anyone can start a Ushahidi map and send a report, only its administrators can publish reports or tag a report as ‘verified’. However, this procedure has not forestalled some glitches. Heather Ford recalls how, during the Chile 2010 earthquake, two false reports received by the Ushahidi team prompted a rescue police operation before they were investigated and found to be false (Ford 2012). She suggests more flexibility in the tagging functionality and increasing the users’ responsibility in determining whether a report is trustworthy or not (*ibid.*).

One answer could be to utilise crowds to substantiate data. Ford argues that not only could the collection of data be crowdsourced, but the process of verification as well. That is, the crowd might provide more context for reports or attest unverified stories (Ford 2012). For example, Jaroslav Valuch says that, while mapping the floods in the

Czech Republic in 2013, the responsibility for authentication fell into crowdsourcing naturally, as people started correcting some entries and providing additional information and evidence (2013).

How to crowdsource the verification process is an area where there has been some exploration. Meier writes about experimental research on how to crowdsource proof tasks by combining best practices with gamification and reputation mechanisms to leverage the support of ‘digital Samaritans’, and the integration of metadata from images and videos taken by eyewitnesses (2013a). Artificial intelligence and advanced computing are being used too to make sense of vast volumes of text messages in response to crises.

Together with the opportunities for digital humanitarianism, the use of the data infrastructure also generates new threats for both human rights defenders and witnesses, since these reports can reveal their whereabouts, activities and networks to surveillance and interception (Hankey and Clunaigh 2013, 536; Stottlemire and Stottlemire 2012, 12). That is, data and metadata generated in data activist projects can be harvested by people in power to monitor and identify activists (Burns 2014).

Starting with the Haiti deployment in 2010, Ushahidi was criticised for not protecting its reporters. Meier recalls how, before making personal information for that deployment public, they consulted with experts who suggested that reporters were giving implied consent by reporting information, and that the team agreed they would do more good if the data were kept open (Meier 2013b). Since then, balancing safety and transparency has always been a challenge. Meier acknowledges that just because social media messages shared during crises are available, utilising them is not inevitably ethical, since social media users’ safety might be compromised in some cases (2015, 91).

Nevertheless, anonymity is not enough to ensure the safety of a reporter, since geolocalised data can lead to a name (Slater 2016). Safety measures need to be integrated across every step of the reporting process. For the Ushahidi Syria Tracker deployment, reporters were given instructions on how to mask their identity and location, which guaranteed that, by the end of 2012, it had compiled reports of 47,887 deaths culled from tens of thousands of emails, news reports and tweets (with the hashtag #basharcrimes; McConnell 2016).

In spite of this, there is pressure to open Ushahidi data; Meier had lobbied at Ushahidi to embrace open data to dispel criticism and demonstrate growth (2013a). By 2016, the question of whether data should be

open had not been settled. Sara Terp, former Director of Data Projects at Ushahidi, says that the platform was still pondering the possible social good of bigger dataset release against the possible jeopardies that come from making datasets public (2016). When making data public, one has to be sure, ‘to the best of your knowledge, skills and advice’, that no harm will come to the people who are connected to the dataset (ibid.).

Ushahidi goes by this rule: before sharing the data, launchers should assess the potential threats in sharing a dataset, and select which dataset can be shared, balancing the potential harms against the potential good (Terp 2016). Ushahidi data can also be shared by making them public on a deployment with an API (e.g. crowdmap.com) or comma-separated values (CSV) download button (which is a Ushahidi plugin), or by making data available to people on request. Terp (ibid.) recommends looking at the following information to evaluate risks beforehand: identification of reporters (e.g. phone numbers, email addresses, names), related military information (e.g. activities, equipment), uncorroborated crime reports, inflammatory statements and level of veracity (e.g. asking questions such as ‘are these reports supported by external information?’).

The latest version of the Ushahidi platform (3.0) includes several features that users can activate to control who has access to system functions, make the deployment password protected and only visible to users with login credentials and enhance secure connections. At the time of writing, Mitchell says that Ushahidi was working on integrating tools, such as encryption and face recognition protection, to minimise the risks for witnesses.

The ownership of the datasets has been put into question too. Terp differentiates between datasets containing ‘direct reports’, or messages contributed by witnesses; ‘indirect reports’, or messages scraped from other applications, such as Twitter or Facebook; ‘category lists’ that reports are tagged with, usually created by the administrators; and ‘media’, such as images, video footage and audio files, which can be added to a report by the reporter or the administrator (2016). Each needs to be treated differently.

Furthermore, other lessons learnt include the fact that similar catastrophic events can generate very different needs, as Aguilar reveals, so there is no such as thing as one size fits all:

In Haiti, the search and rescue needs had to do with food and water security, and health issues. In Chile, people wanted to know where they could

find open shops to avoid ransacking businesses in search of food and water, and where they could contribute or find groceries and other supplies.

Moreover, the impacts of Ushahidi deployments are not always apparent. An evaluation of the deployment in the Kenyan referendum in 2010 notes that overall, the project was a success, the collective action provided a communication channel for Kenyans to share information, and it also enabled some organisations to take immediate action based on the information received (Knight Foundation 2016). For example, of 1500 reports, 149 resulted in ‘actions taken’, primarily through the Constitution & Reform Education Consortium network, one of the partners (*ibid.*). But what does this mean? If less than 10% of the reports resulted in ‘actions taken’, is this a reasonable outcome? Did the rest of the reports not require any action? Why visualise them then? The fact that many deployments simply disappear from the internet when the crisis is over for lack of maintenance makes it difficult to study them. In 2017, Ushahidi launched a new tool, Discover, to help users find active deployments.

Ushahidi publishes commentary regularly from team members and users, but this does not seem to be a standardised practice that serves as a monitoring and evaluation tool. Besides, it is not clear whether there is any supervision to make sure that mistakes are not repeated. For example, the initial difficulties in customising the platform for Ayuda Ecuador due to the lack of guidelines in Spanish clash with the idea that the Haiti experience had taught Ushahidi that adaptation and translation were fundamental for success.

Another evaluation of the 2013 Kenyan election deployment, carried out by iHUB looking at six critical issues (e.g. partnerships, publicity and outreach, personnel, technology, workflows and citizen engagement) found that not all the recommendations emerging from the Haiti 2010 deployment had been internalised (Omenya 2013). Some of these measures included planning early, which can be done in the case of elections, but not in many climate-related disasters (although emergency preparedness should be in place in hazard-prone locations); building effective partnerships so roles and expectations are agreed in advance; and developing a strategy that allows for feedback and security matters to be integrated (*ibid.*).

For example, despite having set up an ecosystem of partners for the Kenyan election deployment—from funders to response and support

providers—a year in advance, the evaluation of the 2013 Kenyan election deployment found that no memoranda of understanding between partners had been signed, no meetings had taken place during the deployment to coordinate action, and other peace monitoring initiatives active during the elections were not engaged either (*ibid.*). The absence of an overall outreach strategy resulted in disjointed publicity, leading to duplication and gaps, which made this the weakest aspect in the deployment (*ibid.*). As noted before, the promotion of a deployment is fundamental to gather a significant number of reports.

Finally, Ushahidi utilises existing commercial platforms and services (e.g. Twitter), transferring the asymmetries and gaps that exist in these technologies into digital humanitarianism, as seen earlier. And far from questioning this, Ushahidi has been embracing more proprietary facilities. In 2017, it integrated the Facebook Messenger chatbot into Uchaguzi to monitor the Kenyan election (Ushahidi 2017b).

Although exemplary, Ushahidi is not flawless. Some deployments have experienced problems in their ability to generate communities, set up processes of data verification and reporter protection, engage other strategic actors and adapt to local realities, and introduce systematic evaluation and monitoring systems. However, its team members seem open to criticism, ready to try and fail and prepared to integrate lessons learnt.

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Conclusions and Areas for Further Research

Abstract Even if the data infrastructure embeds flaws, gaps and biases, people are using it to understand complexity and find solutions to social problems in a democratic, participatory way. Researchers, thinkers and practitioners around the world are engaged in collective number-churning, map-making and social action based on new ways to generate and use data. By doing so, they are also empowering people and causing paradigm changes (e.g. digital humanitarianism) as well as disruptions and irritations in top-down, mainstream, conventional approaches to datafication. They are action-oriented scholars data-based activists and journalists generating maps, platforms and alliances for a better world.

Keywords Citizen data · Action-oriented scholarship · Data practices
Maps · Alliances · Hybridisation

In this book, I have illustrated that, as an information system, the data infrastructure is on a par with the diversity, complexity and disarray of our metamorphosing world. In all ages, people have struggled to map and come to terms with their lifeworld (Jarvie 2015, 165). Big data are both a manifestation of a society composed of hyperconnected individuals and machines, as well as an adequate tool to explore it. However, they are not perfect, since today's changing society allows only for imperfect

mapping systems, and datasets are often incomplete, biased and always framed by social, economic and ideological constructs (Boellstorff 2013; Gitelman 2013, 147–167; Kitchin 2014). Nevertheless, even with flaws and inadequacies, an information system based on data and communication infrastructures can help us navigate this big data society.

Governments and businesses were among the first social agents to utilise the data infrastructure: the former, to come up with more and better public services, but also to spy on, manipulate and control citizens more efficiently than ever (Berendt et al. 2015; Braman 2006); the latter, to generate more personalised marketing, products and services, and access more consumers, but also to manipulate them (Hawley 2012). The data infrastructure has bred a negative form of public–private cooperation: big businesses cooperate in massive governmental surveillance, as the Snowden case illustrates (Castells 2015, 1; Sampedro 2014, 193).

The data infrastructure can propagate inequality and be employed in discriminatory and hegemonic practices (Tufekci 2014; Bauman and Lyon 2013; Brevini et al. 2013; Berry 2011; Deibert and Rohozinski 2010). It is used to single out specific groups (Gangadharan 2012; O’Neil 2016) and to implement manipulating and censoring practices (Braman 2006). The data infrastructure, alone, is not a panacea.

However, by pioneering these technologies, governments and corporations also have innovated and made big data’s value chain increasingly more efficient, inexpensive and accessible, so people in journalism, small businesses and civil society have started to use and appropriate big data for other social uses.

The data infrastructure can also enable complexity to be tackled democratically, as in the hands of people it can empower them and act as a social equaliser. This is how it is being used in data activism.

Precursors of data activism include civic hackers and reactive data activists. Empowered by code and data, they can defy powerful people by spotting and exploiting weaknesses in computer networks and systems. Reactive data activists generate their own secure spheres and networks, protected by firewalls and encryption, to guard themselves against governmental and corporate interference. Civic hackers and reactive data activists, working ‘in the fringes of society’, led the way in data activism, quickly advancing from a marginal to a dispersed phenomenon (Milan and Gutiérrez 2015, 127). Reactive data activists showed the way and made the data infrastructure easier to use for individuals and groups. This process happened as the data infrastructure became more

accessible and prevalent, and data skills were transferred from hackers to ordinary citizens and civil society groups. In this way, proactive data activists started to critically approach datafication, independently producing datasets and using them for change.

Proactive data activism emerges from this transformation. It combines, politically and proactively, communicative practices, technology and information at its outermost complexity—that is, (big) data—as well as collective organising, to produce diagnoses and foster solutions to social challenges.

Using the data infrastructure, for example, to analyse and render useful data provided by whistle-blowers in the WikiLeaks cases, civic hackers have become examples of how to put into practice a prototype of a critical and free press, restoring journalism to its roots in investigative reporting (Sampedro 2014, 14). By employing and vocally demanding data, many data journalists also have stepped into the realm of activism.

Proactive data activism—full-fledged communicative action—assimilates the values of journalism, acquiring the truth-seeking ethos that rules good journalism and research, and then takes a subjective turn of a dramaturgical nature to become non-objective when it uses data and emotion to mobilise people.

Combined with other elements such as solidarity, collaboration and ingenuity, as well as ICTs, the data infrastructure is being exploited to generate alternative digital public spheres in which individuals and groups can participate, exchange vital information and respond to humanitarian crises quicker and more efficiently than ever before. As a result, data activists are affording the possibility of equal participation and approaching the communicative ideal formulated by Habermas: a safe space in which participants treat each other as equals to arrive at a mutual understanding (1991, 33–34). That is, proactive data activist projects create alternative public spheres, where communication and mobilisation can be articulated collectively. In doing so, paraphrasing Froomkin, data activism is facilitating galvanised, engaged citizenry collaborating to create new small-scale communicative spheres (1991, 753).

Proactive data activism can be examined from different perspectives. It is a communicative action, with empirical-analytical, hermeneutic and critical elements. It is also similar to investigative journalism in its analytical nature, to advocacy journalism in its political stance and to citizens' media in its collaborative, horizontal character. It can be compared to alternative media, as data activism creates alternative channels and

presents alternative versions of reality from those of the mass media and power elites. It can also be paralleled with citizens' media, in that proactive data activism places ordinary people on the frontline of content production. It facilitates monitorial citizenship. It is local and transnational at the same time, since it is based on collaboration across borders. And as social movements, it works towards long-term norm change and gathers around solidarity networks, converging on shared beliefs and the pursuit of conflictual, shared aims, utilising alternative means.

Proactive data activist organisations and initiatives can be classified into four different types: skills transferrers, focused on transferring data or social science skills, building opportunities for alliances and creating digital tools for data activism; catalysts, who fund and enable data projects; activist organisations, which produce journalism when media outlets are unwilling or unable to do so; and actual data activists, most of them geoactivists because they utilise interactive maps.

Proactive data activists can also be divided into several subgroups, depending on how they gather and generate data: they can rely on whistleblowers for data; resort to open source, publicly available datasets; use crowdsourcing tools to create citizen data from communities; turn to appropriating data; and get data from primary research that can be datafied or generate their own data (e.g. via sensors).

Proactive data activism also sets in motion an empowering process. The domino effect of, for example, WikiLeaks or the 'Panama Papers', mediated by journalists doing the analysis and visualisations, enthused new energy into journalism across the western world. In the case of projects depending on crowdsourced data, this process is unleashed when the data and communication infrastructures allow *victims* to cease to be alone and become reporting *witnesses*, who regain their agency by generating data on their own terms and taking action on their situations. Because control and power lie in datafication as well (Poell et al. 2015), when people engage in it, they become powerful. Data activism—data power—becomes a redistribution of sway by granting access to knowledge and action to people who had no such access before (Baack 2015, 1).

What follows is a summary of the characteristics, objectives, repertoires of action, methods of data generation and empowering effects that are typical of proactive data activist initiatives. This could be considered a model of proactive data activism for future endeavours or for the analysis of cases not explored in this book.

Characteristics

- Proactive data activists are unapologetic hybridisers: business models, contents, repertoires of action, organisational structures, activities and objectives can be mixed and reworked as needed. Their proactivity makes buy-in and collaboration easy.
- Although never entirely confrontational, proactive data organisations can look like a social movement. They often employ unconventional means, develop flexible network structures, are based on shared beliefs and pursue conflictual aims.
- According to what they specialise in doing, proactive data activist initiatives can be classified as skill transferrers (e.g. data or social science skills transferrers, match-makers or tools producers), catalysts, producers of journalism or geoactivists.

Objectives

- Although they may have immediate goals (e.g. support rescue operations), like social movements, proactive data activists work towards norm change and are identified by the specific use they make of technology to form a collective identity, communicate, convey, mobilise, demonstrate and act.

Repertoires of Action

- From a tactical point of view, geoactivists usually resort to geolocalising information and providing identification of the geographic location of events, peoples and processes (Birregah et al. 2012); categorising and translating text messages and information to facilitate communication and understanding (Meier 2016; Adewumi 2008; Meier and Munro 2010); scraping social media sites for keywords and information (Terp 2016; Rafoth 2015); or locating vital logistical infrastructures on aerial imagery (Parker 2015) and analysing images.
- The attributes most common in proactive data activism include that activists generate visualisations; transfer skills to enable data projects; work in alliances and collaborate; produce data journalistic outputs when media organisations are unable to do so; create data activist projects and content; and resort to campaigning and

advocacy activities for social change. These characteristics, among others, are present in concrete organisations with different levels of intensity.

How They Generate Data

- The manner in which data are obtained for proactive activism is vital and can be a useful way to categorise initiatives into organisations that become recipients of data via whistle-blowers (e.g. ICIJ); derive novel insights from available, but unrelated and unexplored, datasets (e.g. the FFS campaign); generate the means to crowd-source data, which are contributed by communities (e.g. Ushahidi); appropriate data (e.g. MobileMiner); and conduct primary research, whose findings can be datafied and analysed, or engender their own data (e.g. InfoAmazonia).
- Geoactivists can rely on collective participation to produce data contributed by people, and these data are then transformed into layers of information in maps, which are employed for communication, coordination and action. For a geoactivist endeavour based on crowdsourced data to succeed, three types of communities are needed: a critical mass of bloggers, techies and activists who are willing to become expert volunteers working in a sufficiently free environment, and can contribute to the overall effort online; a robust community of non-expert reporters and users, who provide their data and use the resulting information for action; and, in the case of digital humanitarianism, the humanitarian organisations who lead the aid operations on the ground using the information generated by the latter and analysed by the former.
- In digital humanitarianism, each successful deployment requires enthusiastic cooperation and buy-in, both to form a crowd and to work with relevant services on the ground; careful adaptation of the platform to the local situation and its environment, as well as to the crisis at hand; a method of verification of the information provided by users on the ground; careful protection of the individuals reporting information; and collaboration and coordination with rescue services and other actors, both local and international, acting remotely and on the ground. Given the usual need for immediate results in the midst of a crisis, these mechanisms have to be prepared in advance.

Empowering Effects

- What makes proactive data activist endeavours like Ushahidi exceptional is that they rely on crowdsourced data. The empowering force of such projects is intense, independent of the outcome. However, managing expectations is essential. Crowds will not flock to a deployment to provide reports if they do not expect that action will take place as a consequence of their reporting.
- In digital humanitarianism, so-called victims are empowered by being transformed into reporting witnesses, generating awareness, aiding humanitarian efforts and changing humanitarian practices on the ground, as well as the way researchers theorise about them. In general, activist endeavours allow marginalised people to be empowered by occupying an equal position at the decision-making table; regaining data agency; making maps that were once the exclusive monopoly of the state; creating their own alternative communication channels and narratives; and experiencing the feeling of not being alone.

This study leaves many questions remaining; here I compile some of the most interesting.

Big data are ‘going mainstream’ (Schroeder 2015). However, in spite of living in a big data society, citizens and organisations have not fully embraced the culture of data. Examining how this trend evolves in the context of activism seems an engaging line of work.

The issue of data governance has not been tackled in this book, although it deserves intense examination. Who is to govern the data infrastructure? What happens when people are denied their data rights? Should ‘data justice’ exist (Dencik et al. 2016)?

According to Actor-Network Theory (ANT), actors in social networks include both humans and non-humans, and there is no significant distinction between them, as both embody interests (Latour 2003, 389–390). What does data activism look like from an ANT perspective?

The results of advocacy and campaigning efforts are not always easy to ascertain or quantify. Beltrán says in his interview:

Data activism is essential in human rights campaigning, but it will always be incomplete. In general, data are fundamental for Amnesty, and there are many dimensions to them. For example, we still need more and better data about our impact on human rights. And I am not talking about results

such as changes in policy or law, but about how we have contributed to changing the lives of people in the medium and long term.

Campaigns are long endeavours, and sometimes their influence takes years to materialise. Evaluating the effectiveness of data activism regarding impact vis-à-vis other types of activism appears to be another stimulating enterprise.

It was hard to detect examples for some of the categorisations identified in this book, but common sense dictates that there could be more cases in the future. A more encompassing study and classification of cases using the taxonomies proposed in this book would populate these categories with more examples.

Finally, some aspects of digital humanitarianism could be further explored, including how individual commitment is generated, what level of democratic representation, participation and consensus-building there is, and how technology determines change.

These questions are left for another day.

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GLOSSARY

CKAN	Comprehensive Knowledge Archive Network
FFS	Fossil Fuel Subsidies
FOIA	Freedom of Information Act (US)
GANs	Global Action Networks
GCAP	Global Call to Action Against Poverty
GhG	Greenhouse Gas
GIS	Geographic Information System
GSI	Global Subsidies Initiative
HRDs	Human Rights Activists
ICFJ	International Center for Journalists
ICIJ	International Consortium of Investigative Journalists
ICTs	Information and Communication Technologies
IoT	Internet of Things
ITU	International Telecommunication Union
NGO	Non-Governmental Organisation
NSA	National Security Agency (US)
OCHA	Office for the Coordination of Humanitarian Affairs
OCI	Oil Change International
OECD	Organisation for Economic Cooperation and Development
ODI	Overseas Development Institute
OSM	Open Street Map
PAH	Platform for People Affected by Mortgages (Plataforma de Afectados por la Hipoteca)

SMS	Short Message Service
TANs	Transnational Advocacy Networks
ToC	Theory of Change
UAVs	Unmanned Aerial Vehicles
WSF	World Social Forum

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