



Data hubris? Humanitarian information systems and the mirage of technology

Róisín Read, Bertrand Taithe & Roger Mac Ginty

To cite this article: Róisín Read, Bertrand Taithe & Roger Mac Ginty (2016) Data hubris? Humanitarian information systems and the mirage of technology, Third World Quarterly, 37:8, 1314-1331, DOI: [10.1080/01436597.2015.1136208](https://doi.org/10.1080/01436597.2015.1136208)

To link to this article: <https://doi.org/10.1080/01436597.2015.1136208>



Published online: 29 Feb 2016.



Submit your article to this journal [↗](#)



Article views: 3026



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 34 View citing articles [↗](#)

Data hubris? Humanitarian information systems and the mirage of technology

Róisín Read, Bertrand Taithe and Roger Mac Ginty

Humanitarian and Conflict Response Institute, University of Manchester, UK

ABSTRACT

This article looks at the promise of technology to revolutionise humanitarian action, especially in terms of the gathering and use of data. With many heralding a ‘data revolution’, the opportunities and enthusiasm for using social media and SMS data in crisis response are on the rise. The article constructs an analytical framework in order to scrutinise the three main claims made on behalf of technologically advanced humanitarian information systems: that they can access data more accurately, more quickly, and alter power relations in emancipatory ways. It does so in relation to two aspects of digital humanitarianism: visual technology and crisis mapping, and big data. The article is partly informed by a historical perspective, but also by interview and other material that suggests some of the claims made on behalf of technology are exaggerated. In particular, we argue that the enthusiasm for the data is vastly outstripped by the capacity to meaningfully analyse it. We conclude by scoping the implications of the future technological evolution of humanitarianism, in particular by examining how technology contributes to what Duffield terms ‘post-modern humanitarianism’.

ARTICLE HISTORY

Received 28 September 2015
Accepted 22 December 2015

KEYWORDS

Conflict and security
ICT and digital economy
participation and power
humanitarianism
data

Introduction

It is increasingly accepted that information management is critical to the future development of humanitarian action. Data has become increasingly important to the way we think and talk about conflict and our humanitarian responses to it. The prioritising of data is clear in the UN High Level Panel on the Post-2015 Development Agenda’s call for a ‘data revolution’, which ‘would draw on existing and new sources of data to fully integrate statistics into decision making, promote open access to, and use of, data.’¹ This call has been met with enthusiasm by many in, and on the margins of, the humanitarian sector. Garman notes that ‘The pervasive attitude is one of optimism, bordering on technological determinism, which champions the transformative potential of communications technology; assumes the synonymy of innovation and increased effectiveness; and urges organizations and aid workers to get on board, or get left behind’.² This article seeks to interrogate the impact of

technological innovation on contemporary humanitarian action. It recognises that good contextual knowledge is essential in designing humanitarian responses. The need for greater appreciation and integration of local knowledge has been widely recognised, especially where local conflict dynamics are affected by the presence of international humanitarian actors. The conflict context and a perceived shrinking of humanitarian space have also led to a need for improved security data among humanitarian organisations. The desire for and reliance on data have grown, as access to zones of humanitarian action has become increasingly more difficult and these technologies appear to offer a 'digital recoupment of the consequent loss of face-to-face contact'.³

Nevertheless, data is not knowledge, nor is it capacity to analyse it. Many of the developments in digital humanitarianism seem to be driven by what is possible rather than what is needed, to the extent that, as Trevor Barnes noted with regard to the data revolution in geography: 'computational techniques and the avalanche of numbers become ends in themselves, disconnected from what is important'.⁴ He poses an important question: are we generating useful knowledge or are we collecting 'data for data's sake'?⁵ One humanitarian commented that the way information technology operated in the sector was equivalent to 'buying a state of the art car, driving it in to the desert and leaving it there'.⁶ More and more money is invested in developing these technologies but their use is often limited, driven not by a clear sense of what is needed to improve response, but by what the advances in technology enable. This article argues that, rather than the 'actionable data' that the sector requires,⁷ often 'inactionable' data is produced, and that its role and status are worth exploring more fully.

The article connects with wider issues of epistemology and the theoretical underpinnings of how and why information is collected, classified, stored and interrogated, recognising Sandvik et al's call to look beyond 'what technology does *for* humanitarian action to asking what technology does *to* humanitarian action'.⁸ It is written in the knowledge that information systems constitute political ecologies shaped by power, inequality and change. It also acknowledges that these are the early days of the digital revolution and that many uses of technology remain unforeseen. While the focus of the article is on humanitarian information systems in conflict contexts, the article also speaks to a series of on-going debates in International Relations and the social sciences more broadly.

The article will take heed of Barnes' challenge that 'Big data comes with big history'.⁹ It seeks to explore the apparent promise new technology offers to humanitarian responses, in particular to conflict, and adopts a historical perspective. The article has three aims. First, it will take a circumspect view of the 'revolutionary' nature of data technologies by looking at how other technologies have been incorporated into humanitarian practice throughout its history. It will highlight the fact, that rather than offering something 'new', these technologies have tended to operate as 'moments of closure' which have reproduced neoliberal logics and asymmetric power relations within the humanitarian sphere.¹⁰ Second, it will explore what promises have been made about the transformative potential of new information technologies in humanitarian response. It will test these claims using examples from contemporary humanitarian action. Third, it will construct an analytical framework that allows this exploration to take place. This framework tests the experience of NGOs against the claims of data enthusiasts: that technology will render data more accurately and more quickly, and that the process will be emancipatory.

In its first section the article provides a brief overview of the role of technology in the history of humanitarianism, in order to caution against seeing the current 'data revolution' as unprecedented. The section will also show how technology and data gathering have been framing devices that have shaped humanitarian subjects and justified 'appropriate' responses. The second section provides a more contemporary survey of the data landscape, or of the changing context in which current humanitarian information systems operate. Section three reviews the promises of technology against delivery. To do so, it relies on an analytical framework that interrogates the chief claims made on behalf of technology (that it renders humanitarian data more accurately, at greater speed and promises to alter power relations) in relation to two areas of operation: visual technology and crisis mapping, and big data. The conclusion then considers the implications of the digital and data revolutions for the future of humanitarianism.

The a-historicism of humanitarian data gathering

As will be discussed below, there is a sense in some quarters that there is a technological gold rush within humanitarianism: alive to the possibilities and potential that technology brings but ignorant of the fact that we have been here before. Humanitarians have always been adaptive and experimental, yet there is a tendency within the sector to see itself as a 20th-century phenomenon.¹¹ Whether through the use of 'urban planning, mapping and statistics in the governance and ultimate eradication of cholera in European towns',¹² or the use of body density maps to aid the burial process on the Western Front in WWI,¹³ the historical evidence shows that the technologies of data gathering and ordering have a long pedigree. Furthermore, this history starkly reveals some of the tensions arising from the deployment of data gathering techniques. It is not insignificant therefore that many of the originators of the humanitarian system of the 1870s were themselves statisticians intent on shaping afresh modern responses to conflicts on the basis of evidence. JC Chenu, one of the key founders of the Red Cross movement on the French side, produced and compiled the most monumental statistical accounts of the Crimean and Franco-Prussian war,¹⁴ with the explicit intent to 'economise' human life.¹⁵ This data processing was profoundly controversial at the time and the idea of applying political-economic terms to war shocked military traditionalists more attached to ideals of glory, honour and a 'warrior aristocracy'.¹⁶ This statistical challenge to the dominant heroic rhetoric was clearly perceived to be ideological and rooted in a transfer of power within society. While the shift to a 'post-heroic' society only began in the mid-19th century and has arguably not been entirely completed, it is striking that data-based management tools should have been so clearly identified as harbingers of new ways of thinking about the world.¹⁷ The need to use what many regarded as petty capitalistic accounting processes to summarise a war in terms of losses – human and material – was profoundly controversial – even if it made sense to those who had to close the accounts and calculate the war pension liabilities. Data processing in this context meant accounting for the political responsibility of states and humanitarian relief organisations. The central importance of gathering statistics – defining humanitarian subjects – is best embodied in the debate on war victims conducted by humanitarians against the state. By 1871, for instance, the French accounted for 140,871 dead in battle and for another 143,066 who had been wounded and hospitalised. These apparently sharply defined figures hid a multitude of approximate and proxy data or, in the view of the critics of the state, a scandalous desire

to ignore the full extent of the public 'debt of honour', a debt of honour which converted into long lasting financial liability.

In the chaos of the war 19,077 wounded soldiers were recognised as invalids by the state according to the rules of its severe benefits scrutiny committees. Yet from 1871 the quality of this data seemed poor. Only 0.081% of the army had been recognised as having been disabled by diseases caused by the war; in the same period one third of senior civil servants retired on disability pensions – leading critics to argue that life in an office was considerably worse than a retreat through the Vosges in January 1871.¹⁸

Campaigning relentlessly throughout the 1870s for the reopening of 6000-odd cases of forgotten disabled soldiers, an aristocrat, Viscount Riencourt, went to court and obtained further delays: from a closing date of 1876 he managed to obtain the prolongation of the administrative processes until 1878. In 1875 his *manual des blessés et malades de la guerre* was circulated to all parishes, communes and administrations of France – targeting primarily the bodies that might be in charge of charitable support to the disabled. The association revealed a desire for the state to be central rather than acting through the local charitable outlets and it used factual data to convey the scope of that role.

In 1878 a new organisation, *oeuvres des pensions de militaires*, was created. While this new organisation attempted to help thousands of people, its main goal was to maintain the memory of the war alive at a time when the war and the defeat were pushed into the background of French politics. What Joshua Cole has called the power of large numbers in this era was manifest in the humanitarian campaigns of the origins of humanitarian aid.¹⁹ Humanitarian data processing in this instance was narrowly focused on producing new categories of relief recipients, in effect establishing new identities and new rights for entire groups. Encoding an amputee as a war pensioner created a financial liability of almost unlimited duration. It also signalled a significant political desire to establish public recognition for veterans in post-war society. This new role anchored humanitarian work to a much longer-term mission than the mere deployment of relief in wartime – statistical data also represented differently the scale of the task and the enormity of humanitarian needs, and did so arguably better than sentimental appeals to compassion.

Data processing not only transformed the effectiveness of humanitarian rhetoric, it also underpinned the modern development of humanitarian organisations. Subsequent conflicts and humanitarian responses required the production of figures, sometimes of clinical value, sometimes more broad-brushed pictures which were then put to use for fundraising or the deployment of staff and resources. Throughout the history of humanitarian aid one witnesses instances of preliminary information-gathering missions, the production of tables and accounts, and the deployment of auditable accounts which all specifically relate to the need to be accountable and professional.²⁰ Data-gathering and fundraising have been commensurate and structuring technologies of all humanitarian efforts since the 1860s at least – in wartime and disasters.

The development of humanitarian information systems have to be seen in the context of wider contextual developments, alongside the increasing effectiveness of states, the professionalisation of militaries, the development of more complex and speedy transport networks, and the beginnings of a mass media. Telegraphs, telephones and satellite telephones each produced leaps forward in the integration of data into decision making but it is only over the past 20 years that humanitarian organisations have ceased to delegate decision making to the local level. The role of technologies of information was always central but subordinate.

In medical emergencies they played a central role in the deployment of pharmaceutical and medical resources, while large intergovernmental and international relief operations such as the late Second World War UNRRA operation produced mountains of data in real and delayed time.²¹ The processing time was undoubtedly more laborious but it reflected no less the urgency given to the production of statistical and data ‘truths’.

We can see that the incorporation of new technological innovations into humanitarian action has a history as long as humanitarianism itself. Each new use of technology was driven by particular economic and political imperatives operating at the time which have often left a profound legacy. New data uses were subject to criticism and contestation. As new technologies were deployed, their implications for the humanitarian ethos and the very meaning of humanitarianism were debated, in a manner which, as we will see, appears to diverge from much of the conversation about contemporary new technologies which have tended to focus on more technocratic questions of efficacy. Yet there are continuities in many of these debates. What historical examples reveal better than current debates is the depth of embedded value choices and the ramifications of any data concerns. It is possible to trace a continuing fascination with speed and accuracy in information management, as well as fundamental ethical issues arising from data mining, which, as the next section will demonstrate, continues to this day.

The current data landscape

The data revolution within humanitarianism needs to be seen within the purview of a sector subject to dynamic political, economic and cultural pressures. While the sector has its own political economies, stress points and organisational orientations, there is no doubting the overall direction of travel: the sector is large and growing, with humanitarian assistance totalling \$18 billion in 2013.²² Ongoing changes in humanitarianism (and we must be careful not to over-homogenise a complex sector) include professionalisation, securitisation, the number and diversity of actors, privatisation and urbanisation.²³ It is a sector that operates in often *ad hoc* and reactive ways, but which is also increasingly strategic, programmatic and corporate.

In order to explain the increasing use of humanitarian data and technology, it is important to point to the ‘technocratic turn’ experienced by the third sector from the 1980s onwards.²⁴ Public sector and charitable organisations have increasingly prioritised the language and practices of the private sector. An organisational bureaucratic imperative took root, and arguably usurped the original humanitarian aims of many organisations. Audit trails, new tiers of managers and administrators, and the vernacular from New Public Management handbooks were increasingly evident in organisations that had once been associated with well-meaning amateurs and impulsive do-gooders.²⁵ This more corporate orientation was reinforced by increased pressure from donors and publics for efficiency and transparency, and by a developing political economy of competition between organisations for ‘market share’. The technocratic context helps explain the growing role of technology in humanitarianism. Organisations are more aware of technological developments in the business and leisure sectors, they have specialist IT departments, and they are faced with a series of problems of access and coordination in operational theatres that technologies may help address but may also generate. As a result, they are under pressure to adopt enthusiastically, and experiment with, new technologies.

Both the day-to-day and strategic issues facing humanitarian organisations make technological 'solutions' attractive. These issues include the need to collect information in hazardous and hard-to-access areas; to make decisions quickly in situations of imperfect information; to coordinate and sequence with other service providers; to be seen to be effective and compete for 'market share'; to manage increasingly complex back-office operations; and to manage increasing demands for transparency internationally and in the area of operations. As will be seen in the next section, technology promises to do all of this and more.

Humanitarian NGOs routinely collect many types of data which can be broadly divided into two categories: real-time situational data and evaluative data. Real-time situational data includes needs assessments, early warning systems and security data that contribute to the picture of a situation from which an organisation makes decisions. Evaluative data relates more to the performance of the organisation itself and can include programme and project monitoring and evaluation assessments, accountability documents, audits and exit reports. This article will focus on the first kind of data, real-time situational data, as this is the area where much of the optimism around technological advances in humanitarian information systems has been focused.²⁶ Hard evidence on what information systems are being used by the plethora of international NGOs engaged in humanitarian response is scant, and debate in the issue has been mostly limited to informal online forums.²⁷

Much as large established humanitarian NGOs have their foundational moments and myths, such as the Battle of Solferino for the ICRC and the Biafran conflict for MSF, digital humanitarians anchor their narrative in a foundational moment.²⁸ The earthquake in Haiti in 2010 is most commonly given as the step change or turning point for digital humanitarianism.²⁹ For the first time social media and SMS technology were harnessed in 'real time' during a crisis to respond to public health and social emergencies. At first the goal was simply to map the unfolding crisis and identify where people had moved, and it was not connected to any official humanitarian response efforts. However, as the digital map grew, emergency responders began to see how it might assist them. The processes of the digital humanitarians began to change to take a more active (though geographically remote) role in the response. Haiti also signalled the growing role of large information processing businesses, in this case mobile phone companies, in supporting humanitarian data management. Much like Solferino and Biafra, Haiti contains its share of mythologising. Data management capabilities barely compensated for all the frustrating and disappointing lack of coordination displayed by the largest and most diverse humanitarian response of the decade.³⁰

Nevertheless, the Haitian crisis highlighted the fact that real time data could now feature in humanitarian responses. The experience of using real time data was also congruent with the trend towards the securitisation of peace building and humanitarianism. Much data-gathering and analysis technology had military or dual-use origins, and the collection and interrogation of data on large numbers of human subjects was in keeping with an increased emphasis on surveillance, social network analysis and human terrain systems among some militaries.³¹ The insecure contexts in which many humanitarian organisations operated often meant a reliance on military forces for security, or their own recruitment of former military personnel to oversee logistics and security. The result has been, to some extent, a security orientation of data-gathering targets and processes. Traditional data targets, such as gathering geographical data about a crisis area or a needs assessment (be it related to a natural phenomenon or conflict), have been supplemented by the need to

gather security data about incidents and threats of violence.³² A number of security incident databases are now in place.

Despite the apparent march of technology, it is worth noting that traditional human-centric and face-to-face information gathering and sharing still plays a crucial role in humanitarian responses. Thematic cluster or coordination meetings still serve as the main points of in-field data sharing, and many interviewees emphasised the importance of informal information sharing across personal networks. One senior humanitarian official noted that, although information reported by field offices and thematic experts was useful, much of the sharing of security information occurred 'on the margins of meetings' and took a more anecdotal form.³³ Another noted how politically sensitive information was often exchanged informally, and not in written form.³⁴ However, the upward nature of reporting systems, and the devolved structures of many humanitarian organisations, means that, even within an organisation, horizontal information sharing is problematic and much information sharing goes through a more complex route via the headquarters' desks. Basically, field level information may be sent to headquarters in a different country, collated with other data and then sent back to the country of operation. Technology and technocracy play a role here, shaping the collection and processing of information. While we may be tempted to see technology as somehow 'neutral', merely circuitry and satellite transmitted information, it is attended by its own political economy in which some actors (eg IT specialists) are empowered within humanitarian organisations. As Fechter and Hindman note in relation to aid work, 'the technology that surrounds us is often thought to be "just a tool", but tools – be they laptops or irrigation consultants – both shape that in which they are engaged and act in unexpected ways.'³⁵ So technology is co-constitutive of the humanitarian environments it seeks to capture. Rather than merely reflect, or compress, a picture, it has the capacity to construct and define it.

Whether appreciated by their users or not, technological innovations in the humanitarian sphere are part of a political economy in which technocratic solutions and quantitative data are more highly valued than other approaches or knowledges. Yet, despite the problem-solving rationality at the heart of the technocratic turn, many of the developments are rejected in favour of 'low-tech' solutions,³⁶ or even no-tech solutions such as personal relationships. The next section will focus on the promises of technology, assessing the claims that have been made on behalf of innovative new tools to transform inefficient and ineffective humanitarian information systems by offering faster and more precise information, in emancipatory ways.

The promise of technology

This section examines the promise of technological innovation, in particular digital technologies, to improve humanitarian responses, and assesses whether these promises have been met in relation to visualisation and mapping technologies, and big data techniques. The three main claims made on behalf of technology (that it is more accurate, faster and more egalitarian) constitute our analytical framework and are measured against the record of delivery in mapping and visualisation, and big data. To take the claims in order, the first claim is that more accurate situational data can be gathered and conveyed about humanitarian needs and responses. Here the hope is that drones, sensors, intelligent warning systems and similar technologies can address the information deficit often found in conflict or disaster-affected areas and produce high resolution 'actionable information'.³⁷

The second claim is that data can be gathered and conveyed at greater speed, with an impact on the timeliness of humanitarian responses. The benefit of this is clear in sudden-onset disaster contexts in which static technologies (eg landlines) may be disabled. Portable and digital technologies that are less reliant on in-country fixed infrastructure may be able to help fill this gap. Büscher et al note that crowd-sourced information in the hands of digital volunteer networks 'can support faster and more detailed awareness of the needs of affected communities and the nature and extent of damage'.³⁸

The third, and potentially most far-reaching claim, is that technological advances in the humanitarian sector bring opportunities for the transformation of power relations between donors and 'recipients'. The potential here, it is claimed, is that the nature of humanitarianism, and of humanitarians and their 'beneficiaries', can be changed. Thus, for example, crisis-affected populations 'are increasingly becoming "digital communities" as well; [they] are the sensors that light up our new digital nervous system when disasters strike'.³⁹ Just sharing the information has a limited effect; a key part of the promise of these technologies is the opportunity they offer for the organisation of responses.⁴⁰ Thus there is the promise of such systems to transform power relations in favour of 'leaner' and more 'horizontal' networks: 'systems constructed to move information up and down hierarchies are facing a new reality where information can be generated by anyone, shared with anyone and acted on by anyone'.⁴¹ In the words of one self-proclaimed 'digital humanitarian', 'anyone can be a digital humanitarian, absolutely no experience necessary; all you need is a big heart and access to the Internet'.⁴² As Burns observes, the digital humanitarian endeavour involves 'different modes of production, processing, curation, and representation of people, places, and knowledges; that is, most often, digital humanitarianism enrolls spatially and socially-distanced people to work with local knowledges mediated through digital technologies'.⁴³

In this view, technology allows the humanitarian sector to become less exclusive, and less linked to traditional organisations and modes of working. Fundamentally it encourages a redefinition of the sector and its activities. This filters down to 'sense making' or the ways in which the means of information collection shape how the subject matter is interpreted.⁴⁴ Epistemic frameworks are often so culturally embedded that they are spared scrutiny: they are just there. Some scholars and practitioners have, however, engaged with the epistemic implications of how changing means of data collection, interrogation and presentation has the potential to alter understandings of humanitarianism.

It is worth noting that techno-optimism has not spread to all corners of the humanitarian sector.⁴⁵ Kent and Evans balance optimism with caution.⁴⁶ Optimism arose in particular where some spectacular forms of techno-success have been rooted in expensive use of telemedicine⁴⁷, for instance, or in being able to bring high-quality care to previously inaccessible populations. Caution comes in seeing technology as a possible 'disrupter', especially in the interface between technology and natural hazards, as evidenced through the Fukushima nuclear disaster.⁴⁸ Garman is keen to place humanitarian technological innovation in the context of a political economy of upward accountability and is alert to 'the paradox of presence', whereby technology simultaneously allows access to remote areas and populations but may also facilitate the 'retreat of aid workers from the physical site of disaster'.⁴⁹

The scepticism of some notwithstanding, it is worth noting the 'considerable optimism regarding the possibility of improving humanitarian action through new, digital technology'.⁵⁰ As already explained, there is very considerable cultural and material power (eg

through technocracy and the growing role of the private sector in humanitarianism) behind the adoption of digital technologies.

Promises met?

Having set out above the central promises of digital humanitarianism (that data will be collected more accurately, conveyed faster and will be empowering) this section examines the record of humanitarian technologies in relation to mapping and visualisation, and to big data. Clearly our analysis needs to take into account the dynamic nature of the topic: technological capabilities and the up-take of technology by humanitarian organisations are in flux. Thus our analysis can be taken as a snapshot of a fast-moving field. Nevertheless, the up-take of technology in the humanitarian sector has been significant enough for an analysis to be made.

Mapping and visualisation

At a basic level data lends itself to the graphic representation of crises. Although Haiti in 2010 is given as the founding moment for digital humanitarianism, the platform used for much of that digital response – Ushahidi – was first used earlier in 2008 and was created in Kenya as a way to track the post-election violence. Anyone could send in reports of violence via a web-form or SMS, which were then added to a Google map of Kenya.⁵¹ The platform has subsequently been made available as an open source collaborative platform, with improved integration with social media, apps and email added to later versions, and has been used over 20 000 times.⁵² This kind of crowd-sourced mapping is reliant on access to the internet, which as OCHA noted, was only at 24% in Africa in 2011, with ‘fixed broadband services remain[ing] largely unaffordable in Africa.’⁵³ Much of the optimism has centred upon mobile phone technology, which grew by almost 400% between 2005 and 2011 in the top 20 recipients of humanitarian aid.⁵⁴ Yet there is a danger that these technologies may replicate existing power asymmetries, a ‘digital divide’,⁵⁵ as those without access to these technologies tend to be the most marginalised, calling into question the claims about empowerment made for them.

Van der Windt and Humphreys sought to overcome some of the problems of the representativeness of crowd-sourced information by combining it with ‘traditional approaches that rely on known sources and representative samples.’⁵⁶ The resultant crowd-seeding system was *Voix des Kivus*. Across South Kivu province three reporters per included village were identified: one representing traditional leadership, one representing women’s groups and one elected by the community.⁵⁷ Phones and credit, along with codesheets describing how to report events, were given and reports contributed to a model of violence in the region. Although the goal was research, it is possible to see how information of this kind could be used in designing aid interventions. However, this is the kind of technology which, as Duffield observed, allows a withdrawal from the field, while retaining a virtual presence, but involves a significant ‘risk-transfer to a widening range of local intermediaries.’⁵⁸ Furthermore, it must be noted that these technologies themselves can also pose challenges to the operation of humanitarians: ‘Modern digital platforms allow information to move fast, help disinformation to spread, and undermine the capacity of aid organisations to control security incidents.’⁵⁹

However, it is not simply the transfer of risk or the withdrawal from the field that both crowd-sourcing and crowd-seeding technologies enable which has a transformative effect

on the praxis of humanitarian aid. The processes of mapping and data visualisation, in and of themselves, have significant effects on how spaces of intervention are understood and what our relationship to them is. As leading digital humanitarian Patrick Meier notes, 'the radical shift from static, "dead" maps to live, dynamic maps, requires that we reconceptualize the way we think about maps and use them.'⁶⁰ Looking at World Health Organization (WHO) maps of Ebola, it is clear that they enabled the very dramatic representation of the epidemic – and its potential to become a fully fledged pandemic. Circles of outbreaks peppered the three West African countries most affected in a manner which hinted at the overwhelming of their entire populations – a form of graphic rhetoric which was not commensurate with the actual number of casualties relative to the other victims of other illnesses.⁶¹

Essential to new mapping techniques are imaging technologies, in particular satellite data, the increasing use of which 'is radically reshaping the ways different groups comprehend space and place.'⁶² This 'eye in the sky' view appears to offer a mirror to the world, an apparent 'view from nowhere.'⁶³ Yet this disguises the process of production which, as with all mapping, is a process of inclusion and exclusion. The technologies which underpin the humanitarian use of satellite data and mapping were developed in the military sphere.⁶⁴ Furthermore, although access to much of this imagery is free, this disguises the powerful interests of corporations such as Google and Microsoft, who produce and own the images and control what we see and thus how we see the world through them.⁶⁵

The selection and graphic representation of public health or security data, usually in the shape of complex graphs, has entered the public domain throughout the humanitarian sector and many NGO websites contain downloadable graphs and stylised maps for public and media use. The use of similar maps in decision-making processes is a moot point, since their rhetorical persuasiveness is greatest among people least familiar with the means through which they were produced. Whether in the media or among decision makers, graphs and the vivid and simplistic visualisation of data have taken on a ubiquitous but ill-defined role. The discursive choices that the visualisation of data takes are clearly encoded in a less familiar way than other forms of humanitarian rhetoric but they are no less dramatically rhetorical.⁶⁶ The technology itself does not of course produce these rhetorical devices in its own right but the visualisation of data answers to its own aesthetic and ethical norms which, cumulated over time, have become a set of devices which would require careful analysis to become explicit.

Big data

While many have heralded the era of big data, within the humanitarian field the data being given the 'big data treatment', for example social media data, is often not as large as the data sets previously considered big, such as census data. The definition rests on the new modes of aggregation and analysis. As Boyd and Crawford suggest, big data is more helpfully defined 'as a cultural, technological and scholarly phenomenon' combining technology (advanced computation power and algorithmic accuracy), analysis (identifying patterns to make claims) but also mythology; the belief that it offers new and higher knowledge 'with the aura of truth, objectivity, and accuracy.'⁶⁷ They go on to point out that 'interpretation is at the center of data analysis',⁶⁸ however, without a deep understanding of the complex methodological processes involved, interpretation is not possible. This represents a key problem with the potential of big data in humanitarian action to contribute to improved efficiency

or effectiveness: there is insufficient understanding of the methodological tools necessary for collection and analysis of big humanitarian data.

Thinking about the potential of big data in humanitarianism to contribute towards empowerment requires a discussion of the ethics involved in collecting and analysing data, especially in light of the 'Do no harm' humanitarian doctrine.⁶⁹ As Crawford et al note, this means we need to 'more broadly consider the human impact – both short and long term – of how data is being gathered and used'.⁷⁰ It also involves a recognition of the political economies that attend the gathering and interrogation of data. Technical information also requires more rigorous methodological consideration and, as such, takes time and training – with the result that better trained and considerate operators are also more explicit about the limitations of the data collected.⁷¹ The technologies required to interrogate big data may mean that its use is restricted to a privileged few.

So are the promises of data being met? It would be churlish not to recognise the benefits that data technologies bring, and potentially can bring, to humanitarian work. It is also worth noting that this is a fast changing issue area and that the possibilities of technology will continue to surprise.⁷² Yet many of the claims are worth interrogating in the light of evidence emerging from humanitarian workers and apparent 'beneficiaries'.

Arguments can be made that data technologies are empowering, especially as high technology falls in price and becomes more accessible or indeed demotic through crowd sourcing. There have been multiple cases of the crowd sourcing of data on violence (eg the Libya Crisis Map, and Voix des Kivus in the Democratic Republic of Congo). Some of this has involved the coordination and vertical transmission of localised knowledge to alert national and international actors and audiences to urgent situations. In other cases, for example Kenya, there has been horizontal information sharing, whereby citizens have used technology to alert each other to unfolding situations.⁷³ Graeff and Matias even show how an improvised drone can be made using widely available equipment.⁷⁴ Yet, in order to assess the extent to which data might be empowering, it is prudent to examine the context-specific socio-cultural relationship between people and data technology. Martin-Shields notes how 'it is not enough to crowd-source the information and put it on a digital map, then expect the local population to take the initiative and to track down the information and decide what to do with it'.⁷⁵ Not only do people need access to technology (not a given in many conflict and disaster-affected contexts) but they also need to be convinced that such technology could be useful to them and their communities. Again, that is not a given, particularly in contexts in which political regimes may be untrusted and ideas of civil society may be very different from the packaged NGO-variety common in Western states.

Data technologies serve themselves first and foremost but they also empower their supporters, as 19th-century observers pointed out. In particular, their promises are exponential and they offer powerful policy-oriented rhetorical tools. The most significant empowerment that data technology risks bringing is that of those who believe in the potential of technology. The promise of greater accuracy and speed of information gathering, together with the novelty aspect that technology can bring, may constitute material power and demand-resource reallocation within international organisations and INGOs. Although cloaked in the language of empowerment, data technology may be based on an ersatz participative logic in which local communities feed data into the machine (either through crowd sourcing, or by being enumerators or subjects in most traditional surveys) but have little leverage on the design or deployment of the technology. It is worth asking: where does power lie in the deployment

of humanitarian information systems? If the power of initiative, design, funding and analysis still resides with the tech-savvy individuals and organisations based in the global North, then it is difficult to concur with the view that technology is empowering or liberating.

One of the challenges facing visual technology is that it is a useful rather than a supplementary way of conveying already available information. Drone footage of Gaza (following the 2014 Israeli assault) and Nepal (following the 2015 earthquakes) became social media 'hits'. The arresting footage was reminiscent of aerial footage of a devastated 1945 Berlin. But it is worth asking whether data gathered from such flights was scientifically useful to humanitarian organisations beyond communication strategies, in operational terms of needs assessments and the targeting of assistance? The main use may have been in advertising the scale of the catastrophes to a wide audience who may then have been prompted to give donations. Yet the click-bait nature of some of the advertising of the 'amazing', 'incredible', 'shocking' drone footage from Nepal suggests something close to voyeurism or 'newstainment',⁷⁶ which may have its own fundraising benefits.

Conclusion

This survey of data technology and the humanitarian sector has pointed to the possibility of technological epistemic closure in the humanitarian field. Technology can have a self-reinforcing logic whereby one set of technologies (for example, information gathering) leads to another set of technologies (for example, information processing). This becomes potentially problematic if technologies become naturalised and mainstreamed to the extent that they are not subject to fundamental questioning, or they exclude other methodologies. As David Chandler argues, one possibility of data technologies is essentially conservative: 'reducing governance to an ongoing and technical process of adaptation, accepting the world as it is'.⁷⁷ In this view data technology is less than emancipatory – it becomes a system of replication that reinforces existing power holders and reifies technical advances rather than more fundamental ones related to power and agency.

Yet there is another reading of the emancipatory potential of data technology in the humanitarian sector. In this reading the crowd sourcing of data has the potential to shift the ownership of knowledge. Humanitarian Street Mapping, as occurred with volunteers from all over the world in relation to the 2015 Nepal earthquake, means that information is no longer the exclusive property of particular UN agencies or INGOs. Potentially this means that it will become difficult for humanitarianism to go back into the box of perceived Western 'do-gooding'. Instead, it may become a more participatory process, with multiple sites of ownership and direction. Moreover, technological advances may mean that fewer external actors are on the ground and thus many of the problems that occur along the local–international interface may be obviated.

Our analysis suggests that declarations of emancipation via a data revolution are premature. There is a danger that much of what we see is the same information being processed more quickly. Content analysis of data, even if that data is collected by local actors on the ground, is rarely conducted in local languages. The data revolution risks reinforcing technocratic specialists who are often based in headquarters. Greater connectivity has produced greater demands from humanitarians to support their own connectivity.

The evidence thus far suggests that the information-gathering capabilities of some humanitarian actors outstrip their capacity to deal with the information. This suggests a

profound inefficiency (resources wasted on gathering information that cannot be fully processed) and suggests two possible remedies. The first would be to enhance the data-processing capabilities of humanitarian organisations, although such an approach seems to be supply-led. The second would be to rein in the information-gathering ambitions of humanitarian organisations so that they collect enough, but not excessive, information.

Ultimately we conclude that the new aspiration towards hubristic big data processing is just another step in the same modernist process of the production of statistical truth.⁷⁸ Where it holds a particularly seductive power is in the promise that it may, somehow, become autonomous of human intervention, magnified in legitimacy and relevance by the new processing technologies. The ideal of giving a full and accurate picture of a 'security' setting in 'real' time relates to the associated concerns with risk evaluations and assessment. The fuller picture would also offer the illusion of total accountability and depiction – much like a 1:1 scale map might do⁷⁹ – yet, much like a 1:1 map (a map the size of the land it portrays), it can only present an instant image, subject to constant revisions so numerous that the map would lose legibility and intelligibility. The data mining and the shaping of the algorithms will become more contentious with time and will, like all statistical accounts of the past, form the basis of profoundly political controversies.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Economic and Social Research Council [grant number ES/L007479/1].

Notes on Contributors

Róisín Read is a research associate at the Humanitarian and Conflict Response Institute, University of Manchester. Her research explores the politics of international interventions in conflict situations through an interrogation of language, with a special focus on NGOs and the Sudans. She completed her ESRC-funded PhD in the Institute for Development Policy and Management, University of Manchester in 2013. The research used grammatical reading to uncover the impacts of unquestioned assumptions of one NGO (Oxfam) in South Sudan on practices of relief and reconstruction in the 2005–12 transition period. She is particularly interested in questioning practices of knowledge production in post-conflict environments.

Bertrand Taithe is professor of Cultural History at the University of Manchester. Founder director of the Humanitarian and Conflict Response Institute ("<https://protect-us.mimecast.com/s/LL62BWslNRRreUd>" hcri.ac.uk) which combines a range of disciplines including history for the study of humanitarian aid and disaster relief, he has been elected on the steering committee of ALNAP ("<https://protect-us.mimecast.com/s/GWJGBltp224cR>" Alnap.org) and is a member of the scientific committee of the think tank of MSF, CRASH. He also works closely with Save the Children and a range of other NGOs. Bertrand Taithe has been writing on the history of humanitarian aid since 1997 and has published a wide range of articles

and blogs on humanitarian affairs. His full range of publications and writings are available on "<https://protect-us.mimecast.com/s/Y1zJBrtDMmmJsD>" <https://historyofhumanitarian-aid.com/>. Bertrand Taithe edits a book series with Manchester University Press entitled *Humanitarianism, Key Debates and New Approaches*. He is currently finishing a co-authored monograph: *Selling Compassion with Professor Strange and Dr Roddy* and working on contemporary and historical humanitarian practices, and medical science in refugee camps.

Roger Mac Ginty is a professor of Peace and Conflict Studies at the Humanitarian and Conflict Response Institute, and the Department of Politics, University of Manchester. His research has been on peace processes, political violence and local responses to international peace-support interventions. He has conducted field research in Bosnia-Herzegovina, Croatia, Georgia, Jordan, Kosovo, Lebanon, Sri Lanka, Uganda and the USA. He edits the journal *Peacebuilding* (with Oliver Richmond) and edits a book series with Palgrave entitled 'Rethinking Political Violence'.

Notes

1. UN High Level Panel, *Economies through Sustainable Development*, 24.
2. Garman, "New Communications Technologies," 440.
3. Duffield, "The Digital Development–Security Nexus," 81.
4. Barnes, "Big Data, Little History," 298.
5. Ibid.
6. Author interview with INGO officer, March 2015.
7. Mancini and O'Reilly, "New Technology," 3.
8. Sandvik et al., "Humanitarian Technology," 222 (emphasis in the original).
9. Barnes, "Big Data, Little History," 298.
10. Burns, "Moments of Closure."
11. Pallister-Wilkins, "Personal Protective Equipment," 2.
12. Ibid.
13. Hughes-Wilson, *A History of the First World War*, 244–245.
14. Fredj, "Compter les morts de Crimée"; and Chenu, *De la mortalité dans l'armée*.
15. Taithe, "Reinventing (French) Universalism."
16. Howard, *The Invention of Peace*, 20.
17. Chapplain, *De l'intendance du corps médical militaire*.
18. Riencourt, *Les blessés oubliés*, 108–109.
19. Cole, *The Power of Large Numbers*.
20. Toner, "Roman Disasters"; and Roddy et al., "The Charity-mongers of Modern Babylon."
21. Salvatici, "Help the People Help Themselves".
22. Slim, "Wonderful Work," 13.
23. Redmond, "Professionalisation"; Fast, "Securitization"; Mawdsley, "'Non-DAC' Humanitarian Actors"; McKechnie, "The Private Sector"; and Morand, "Urban Refugees."
24. Box, "Running Government"; and Mac Ginty, "Routine Peace."
25. Slim, "Wonderful Work," 14.
26. Harvard Humanitarian Initiative, *Disaster Relief 2.0*; and UN OCHA, *Humanitarianism in the Network Age*.
27. Sandvik et al., "Humanitarian Technology," 221.
28. Taithe, "Reinventing (French) Universalism."
29. Sandvik et al., "Humanitarian Technology," 220; and Meier, *Digital Humanitarians*, 1–23.
30. Harvard Humanitarian Initiative, *Disaster Relief 2.0*.
31. Amooore, *Algorithmic War*.
32. Read and Mac Ginty, "Politics of Coding."
33. Interview with the authors, January 12, 2015.

34. Interview with the authors, January 11, 2015.
35. Fechter and Hindman, "Introduction," 4.
36. Harvard Humanitarian Initiative, *Disaster Relief 2.0*, 10–13.
37. Burns, "Rethinking big data," 478.
38. Büscher et al., "Social Collective Intelligence," 244.
39. Meier, *Digital Humanitarians*, 27.
40. Ibid.
41. UN OCHA, *Humanitarianism in the Network Age*, 2.
42. Meier, *Digital Humanitarians*, 1.
43. Burns, "Moments of Closure," 51.
44. Muhren and Van de Walle, "A Call for Sensemaking," 429–430.
45. Weissman and Neuman, *Saving Lives and Staying Alive: The Professionalisation of Humanitarian Security Paperback*.
46. Kent and Evans, *Humanitarian Futures*, 393.
47. Cooter et al., *Medicine, War and Modernity*.
48. Kent and Evans, "Humanitarian Futures," 389.
49. Garman, "New Communications Technologies," 433; and Collinson et al., *Paradox of Presence*.
50. Sandvik et al., "Humanitarian Technology," 220.
51. Meier, "Crisis Mapping in Action," 91.
52. Meier, "Crisis Mapping in Action," 92.
53. UN OCHA, *Humanitarianism in the Network Age*, 14.
54. UN OCHA, *Humanitarianism in the Network Age*, 11.
55. Büscher, "Social Selective Intelligence," 257.
56. Van der Windt and Humphreys, "Crowdseeding in Eastern Congo," 3.
57. Van der Windt and Humphreys, "Crowdseeding in Eastern Congo," 4–5.
58. Duffield, *Disaster-resilience*, 11–12.
59. Vazquez Llorente and Wall, "Introduction," 4.
60. Meier, "Crisis Mapping in Action," 89.
61. WHO report: <http://www.who.int/csr/disease/ebola/maps/en/index1.html> (in particular the map of 26 August).
62. Dodge and Perkins, "The 'View from Nowhere?'," 497.
63. Ibid.
64. Perkins and Dodge, "Satellite imagery," 547.
65. Dodge and Perkins, "The 'View from Nowhere?'," 497.
66. Benthall, *Disasters*.
67. Boyd and Crawford, "Critical Questions," 663.
68. Boyd and Crawford, "Critical Questions," 668.
69. Anderson, *Do no Harm*.
70. Crawford et al, "Big data, Communities and ethical resilience", 4.
71. Interview with the authors, January 12, 2015.
72. Kent and Evans, "Humanitarian Futures," 388–389.
73. Mancini and O'Reilly, "New Technology," 3.
74. Graeff and Matias, "Making Drones Civic," 7.
75. Martin-Sheilds, "Technology, Conflict and Crises," 19.
76. UNICEF, "Nepal Earthquake"; "Nepal Earthquake"; and "Shocking Drone Footage."
77. Chandler, "A World without Causation," 835.
78. Cole, *The Power of Large Numbers*; and Poovey, *A History of the Modern Fact*.
79. Eco, "On the Impossibility of Drawing a Map."

Bibliography

- Amoore, L. "Algorithmic War: Everyday Geographies of the War on Terror." *Antipode* 41, no. 1 (2009): 49–69.
- Anderson, M. B. *Do no Harm: How Aid can Support Peace – or War*. Boulder, CO: Lynne Rienner, 1999.

- Barnes, T. J. "Big Data, Little History." *Commentary: Dialogues in Human Geography* 3, no. 3 (2013): 297–302. <http://dhg.sagepub.com/cgi/content/abstract/3/3/297>.
- Benthall, J. *Disasters, Relief and the Media*. London: I. B. Tauris, 1993.
- Box, R. "Running Government like a Business: Implications for Public Administration Theory and Practice." *American Review of Public Administration* 29, no. 1 (1999): 19–43.
- Boyd, D., and K. Crawford. "Critical Questions for Big Data." *Information, Communication & Society* 15 (March 2015): 662–679.
- Burns, R. "Moments of Closure in the Knowledge Politics of Digital Humanitarianism." *Geoforum* 53 (2014): 51–62. doi:10.1016/j.geoforum.2014.02.002.
- Burns, R. "Rethinking big data in digital humanitarianism: practices, epistemologies, and social relations." *GeoJournal* 80 (2015): 477–490.
- Büscher, M., M. Liegl, and V. Thomas. "Social Collective Intelligence in Crises." In *Social Collective Intelligence: Combining the Powers of Humans and Machines to Build a Smarter Society*, edited by D. Miorandi, V. Maltese, M. Rovatsos, A. Mijholt, and J. Stewart, 243–265. London: Springer, 2014.
- Chandler, D. "A World without Causation: Big Data and the Coming Age of Posthumanism." *Millennium* 43, no. 3 (2015): 833–851.
- Chaplain, L. *De l'intendance du corps médical militaire et de la mortalité dans l'armée, réponse à monsieur le docteur Chenu*. Paris: Jean Dumaine, 1872.
- Chenu, J. C. *De la mortalité dans l'armée et des moyens d'économiser la vie humaine*. Paris: Hachette, 1870.
- Cole, J. *The Power of Large Numbers: Population, Politics, and Gender in Nineteenth-century France*. Ithaca, NY: Cornell University Press, 2000.
- Collinson, S., and M. Duffield with C. Berger, D. F. da Costa, and K. Sandstrom. *Paradoxes of Presence: Risk Management and Aid Culture in Challenging Environments*. London: HPG, ODI, 2013.
- Cooter, R., M. Harrison, and S. Sturdy. *Medicine, War and Modernity*. Stroud: Sutton, 1999.
- Crawford, K., G. Faleiros, A. Luers, P. Meier, C. Perlich, and J. Thorp, 2013. *Big Data: A Framework for Action*, pp.1–13. Available at: http://poptech.org/system/uploaded_files/66/original/BellagioFramework.pdf.
- Dodge, M., and C. Perkins. "The 'View from Nowhere'? Spatial Politics and Cultural Significance of High-resolution Satellite Imagery." *Geoforum* 40, no. 4 (2009): 497–501.
- Duffield, M. *Disaster-resilience in the Network Age: Access-denial and the Rise of Cyber-humanitarianism* DIIS working paper 23. Copenhagen: Danish Institute for International Studies, 2013.
- Duffield, M. "The Digital Development-Security Nexus: Linking Cyber Humanitarianism and Drone Warfare." In *Handbook of International Security and Development*, edited by P. Jackson, 80–94. Cheltenham: Edward Elgar, 2014.
- Eco, U. "On the Impossibility of Drawing a Map of the Empire on a Scale of 1 to 1." In *How to Travel with a Salmon and Other Essays*. New York: Harcourt, 1994.
- Fast, L. "Securitization and Threats to Humanitarian Workers." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 313–323. Abingdon: Routledge, 2015.
- Fechter, A.-M., and H. Hindman. "Introduction." In *Inside the Everyday Lives of Development Workers: The Challenges and Futures of Aidland*, edited by A.-M. Fechter and H. Hindman, 1–19. Sterling, VA: Kumarian Press, 2011.
- Fredj, C. "Compter les morts de Crimée: un tournant sur l'identité professionnelle des médecins de l'armée française (1865–1882)." *Histoire, économie & société* 29, no. 3 (2010): 95–108.
- Garman, S. "New Communications Technologies in Emergencies." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 440–452. Abingdon: Routledge, 2015.
- Graeff, E., and N. J. Matias. "Making Drones Civic: Values and Design Principles for Civic Technology." Paper presented at the 'Unmanned Rights: Drone Use by Civil Society' panel at the International Studies Association's 56th Annual Convention, New Orleans, LA, February 20, 2015.
- Harvard Humanitarian Initiative. *Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies*. Washington, DC/Newbury, UK: UN Foundation/Vodafone Foundation Technology Partnership. <http://www.wspa.ca/wspaswork/disasterrelief/Default.aspx>.
- Howard, M. *The Invention of Peace*. Yale: Yale University Press, 2000.
- Hughes-Wilson, J. *A History of the First World War in 100 Objects*. London: Cassell/Imperial War Museum, 2014.

- Kent, R., and S. Evans. "Humanitarian Futures." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 387–402. Abingdon: Routledge, 2015.
- Mac Ginty, R. "Routine Peace: Technocracy and Peacebuilding." *Cooperation and Conflict* 47, no. 3 (2012): 287–308.
- Mancini, F., and M. O'Reilly. "New Technology and the Prevention of Violence and Conflict." *Stability* 2, no. 3 (2013): 1–9.
- Martin-Shields, C. P. "Technology, Conflict and Crises: Crowdsourcing Technology in Conflict Resolution and Crisis Management Research and Practice." Paper presented at the International Studies Association Annual Conference, New Orleans, LA, February 20, 2015.
- Mawdsley, E. "'Non-DAC' Humanitarian Actors." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 204–214. Abingdon: Routledge, 2015.
- McKechnie, A. "The Private Sector and Humanitarian Action." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 241–253. Abingdon: Routledge, 2015.
- Meier, P. "Crisis Mapping in Action: How Open Source Software and Global Volunteer Networks are changing the World, One Map at a Time." *Journal of Map & Geography Libraries* 8, no. 2 (2012): 89–100.
- Meier, P. *Digital Humanitarians: How Big Data is changing the Face of Humanitarian Response*. Boca Raton, FL: CRC Press, 2015.
- Morand, M. B. "Urban Refugees." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 417–428. Abingdon: Routledge, 2015.
- Muhren, W. J., and Van de Walle, B. "A Call for Sensemaking Support Systems in Crisis Management." *Studies in Computational Intelligence*, no. 281 (2010): 425–452.
- "Nepal Earthquake: Drone captures Incredible Footage over Kathmandu showing Aftermath of the Disaster." *Daily Mirror*, April 27, 2015. <http://www.mirror.co.uk/news/world-news/nepal-earthquake-drone-captures-incredible-5592151>.
- Pallister-Wilkins, P. "Personal Protective Equipment and the Humanitarian Governance of Ebola." Paper presented at the International Studies Association Annual Conference, New Orleans, LA, February 2015.
- Perkins, C. & Dodge, M., 2009. Satellite imagery and the spectacle of secret spaces. *Geoforum*, 40(4), pp.546–560. Available at: <http://dx.doi.org/10.1016/j.geoforum.2009.04.012>.
- Poovey, M. *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. Chicago, IL: University of Chicago Press, 1998.
- Read, R., and R. Mac Ginty. "The Politics of Coding Violence: Exploring the Ontologies of Security Incident Databases." Unpublished draft (2015).
- Redmond, A. "Professionalisation of the Humanitarian Response." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 403–416. Abingdon: Routledge.
- Riencourt, Comte de, *Les blessés oubliés – les pensions militaires pour blessures et infirmités*. Abbeville: Paillart, 1882.
- Roddy, S., J.-M. Strange, and B. Taithe. "The Charity-mongers of Modern Babylon: Bureaucracy, Scandal, and the Transformation of the Philanthropic Marketplace, c. 1870–1912." *Journal of British Studies* 54, no. 1 (2015): 118–137.
- Salvatici, Silvia. "'Help the People to Help Themselves': UNRRA Relief Workers and European Displaced Persons." *Journal of Refugee Studies* 25, no. 3 (2012): 428–451.
- Sandvik, K. B., M. Gabrielsen Jumbert, J. Karlsrud, and M. Kaufman. "Humanitarian Technology : A Critical Research Agenda." *International Review of the Red Cross* 96, no. 893 (2014): 219–242.
- "Shocking Drone Footage shows Vast Destruction in Nepal." RYOT, April 27, 2015. <http://www.ryot.org/drone-footage-nepal-earthquake/930404>.
- Slim, H. "Wonderful Work: Globalizing the Ethics of Humanitarian Action." In *The Routledge Companion to Humanitarian Action*, edited by R. Mac Ginty and J. H. Peterson, 13–25. Abingdon: Routledge, 2015.
- Taithe, B. "Reinventing (French) Universalism: Religion, Humanitarianism and the 'French Doctors.'" *Modern and Contemporary France* 12, no. 2 (2004): 147–158.
- Toner, J. *Roman Disasters*. Cambridge: Polity, 2013.
- UN High Level Panel. *Economies through Sustainable Development of a new Global Partnership: The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda*. New York: United Nations, 2013.

- UN OCHA. *Humanitarianism in the Network Age*. New York: United Nations, 2012.
- UNICEF. "Nepal Earthquake: Amazing Drone Footage shows Impact of Disaster." UNICEF Blog. 2015. <http://blogs.unicef.org.uk/2015/05/06/nepal-earthquake-drone-footage/>.
- Van der Windt, P., and M. Humphreys. "Crowdsourcing in Eastern Congo: Using Cell Phones to collect Conflict Events Data in Real Time." *Journal of Conflict Resolution*, no. 1 (2014): 1–34. <http://jcr.sagepub.com/cgi/doi/10.1177/0022002714553104>.
- Vazquez Llorente, R., and I. Wall. "Introduction." In *Communications Technology and Humanitarian Delivery: Challenges and Opportunities for Security Risk Management*, edited by R. Vazquez Llorente and I. Wall, 4–6. European Interagency Security Forum (EISF).
- Weissman, and Neuman. *Saving Lives and Staying Alive: The Professionalisation of Humanitarian Security* Paperback, edited by Michaël Neuman, and Fabrice Weissman. London: Hurst, 2016.