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DIGITAL VOLUNTEER NETWORKS AND HUMANITARIAN CRISIS REPORTING

Dmitry Chernobrov

Digital technologies and big data are rapidly transforming humanitarian crisis response and changing the traditional roles and powers of its actors. This article looks at a particular aspect of this transformation—the appearance of digital volunteer networks—and explores their potential to act as a new source for media coverage, in addition to their already established role as emergency response supporters. I argue that digital humanitarians can offer a unique combination of speed and safe access, while escaping some of the traditional constraints of the aid-media relationship and exceeding the conventional conceptualizations of citizen journalism. Journalists can find both challenges and opportunities in the environment where multiple crisis actors are assuming some of the media roles. The article draws on interviews with humanitarian organizations, journalists, and digital volunteer networks about their understanding of digital humanitarian communication and its significance for media coverage of crises.

KEYWORDS   digital humanitarianism; digital volunteers; crowdsourcing; media; citizen journalism; humanitarian crisis; crisis informatics; big crisis data; humanitarian communication

Introduction

There were only two western correspondents in Rwanda in April 1994 (Thompson 2007) when the genocide started. Subsequent presence of major media, as in many other crises, was largely hampered by considerations of safety and limited access, and in the Rwandan genocide case, some media provided coverage from neighboring countries (Hilsum 2007). In 2010, when a devastating earthquake struck Haiti, the crisis was more accessible to major media, and yet the footage and information they provided was recycled again and again and quickly became repetitive and outdated (Meier 2015a). Social media and digital efforts to document and map the Haiti devastation offered new, close to real-time sources of information for humanitarian response and media coverage. But besides "citizen journalists" who could share eyewitness accounts to the unravelling events and whose outputs are now widely picked up by media in crisis situations and are well explored in media literature (Aitamurto 2016; Dailey and Starbird 2014; van der Haak, Parks, and Castells 2012), the Haiti earthquake gave birth to "digital humanitarians" or "digital volunteers"—the online community of volunteers across borders and cultures who collaborated to collect, verify, translate, and map information about the crisis across various digital channels from Twitter to SMS to aid the relief efforts (Meier 2015a; Park and Johnston 2017). They offered a new, constantly updated digital source of information about the crisis which could help inform local

populations, the rescue operation, and media coverage. Importantly, unlike professional journalists or "citizen journalists" who described the crisis *from the ground*, "digital humanitarians" processed crisis data and provided valuable crowdsourced information while being *safely distant* from the earthquake zone itself.

The humanitarian field is rapidly changing in response to digital technologies. There is a growing sense of upcoming major shifts and new operational models among both humanitarian workers and journalists. In a recent interview, a senior humanitarian figure admitted to me that he anticipated the emergence of online platforms, not unlike "Uber for humanitarian response", which would directly match specific needs of affected populations with aid providers in real time. Hughes and Tapia (2015, 694) offer an alternative, but not contradicting suggestion—"an al-a-carte system where digital volunteers can advertise available services and emergency responders can then order the services they need". The exact shape of the digital transformation of humanitarian communication and response is yet to be seen, but it has already produced certain expectations and raised bigger societal and political questions.

This article focuses on two aspects of this transformation, which re-shape the traditional relationship between journalists, aid agencies, and audiences in humanitarian crises. First, digital sources, including crisis data processed and mapped by digital humanitarians, open new opportunities for crisis reporting, redraw the existing constraints of safety, access, and speed, and consequently, may influence the quality of coverage and the visibility of some crises over others. Access to these sources is faster, safer, and cheaper in the context of shrinking foreign news budgets, but the accuracy of crowdsourced data can vary. While many studies explore the technological, computational, and operational changes introduced by new communication technologies in disaster response, the potential of digital humanitarians (and not on-the-ground citizen journalists) as a new media source is still largely unexplored. Second, digital transformations suggest the more direct communication between affected populations, donor audiences and aid agencies. How would this impact the role of the media in this relationship? What would this mean for empowering people themselves (both the affected populations and the digital volunteers who span across state borders), when the major actors in crises have traditionally been states, local structures and international organizations? This article takes up these questions to discuss how the new forms of digital communication between affected populations, volunteers, aid agencies, and media are changing humanitarian crises, their coverage, and the power of the actors involved.

Method

The article contrasts the existing scholarship on digital humanitarianism with insights from original semi-structured interviews with three key actors: humanitarian organizations, journalists, and digital volunteer networks. The interviews were held in 2016–2017 as part of a larger study on the existing problems and the future of humanitarian communication. Interviewees quoted in this article agreed to be identified and include *Philippe Stoll* (Deputy Head of Public Communication at ICRC—the International Committee of the Red Cross); *Josephine Fox* (former regional information delegate for IFRC—the International Federation of Red Cross and Red Crescent Societies—during the Rwanda genocide, and current Director of Resources, Communications & Special

Projects at Global Emergency Group); *Lindsey Hilsum* (International Editor at UK Channel 4 News); and *Per Aarvik* (President and General Coordinator at a leading digital volunteer network SBTF—Standby Task Force). Their responses are also placed in the context of current communication strategies of major humanitarian agencies. Timewise, the focus is on the humanitarian crises since the 2010 Haiti earthquake, both in western and non-western contexts. The argument reaches across a number of cases, to the conceptual understandings that media, humanitarian organizations, and digital humanitarians themselves have about digital volunteer networks as a new information source.

Digital Volunteers as a New Information Source

Matching needs to rescue and aid efforts in time for them to be effective is one of the major challenges in humanitarian response. Governments, humanitarian organizations and publics have an explicit demand for relevant, findable, and actionable information during crises; yet, compared to the key needs of food, water and shelter, information is "the most perishable" (Meier 2015a) as the delay between information and action is significant and information often becomes outdated before action is taken. In fact, what is considered fast is often slow: media that have traditionally been accused of sensationalism in crises (Cottle and Nolan 2007; Lewis 2008) have also been blamed for returning inaccurate, outdated, and repetitive information as reporters are unfamiliar with local communities and conditions (Novak and Vidoloff 2011), access to crisis zones is limited, and so is the ability to provide real-time updates. In turn, humanitarian organizations predominantly develop their response based on local authorities' requests and evaluations by their own assessment teams sent into the affected areas (Tapia et al. 2011). Collecting accurate and actionable information takes time, from a few hours to several weeks, for example, as in the case of UN interview-based two-week "rapid surveys" to assess disaster damage and key needs (Meier 2015a; 39). There is a clear demand for reaction time-improving solutions, but also organizational conservatism in adopting them (Burns 2015; Hughes and Tapia 2015) due to institutional policies, established verification procedures, and the critical value of accurate information in dealing with humanitarian tasks.

Recent developments in digital technologies, including social media, ever growing accessibility of mobile technologies to global populations, and new methods of aggregating and processing data during emergencies, have opened a number of opportunities for both media and aid organizations in reshaping their response to humanitarian crises. One of the most profound changes has been the ability to involve populations themselves in identifying needs, crisis locations, local constraints and other critical information via digital channels of communication. Through digital means, affected communities have become a *new information source*—a "crowd source"—that can inform both humanitarian response and media coverage. Likewise, digital channels have also been used for disseminating information to local populations about shelter locations, availability of aid, and recommended behaviors.

For media, the new opportunities have mainly broadened the range of available sources, increased the speed of reporting, and reduced the costs. There is an already vast scholarship on media engagement with user-generated content and citizen journalism in various crisis situations and reporting contexts, from popular uprisings to war,

terrorist attacks, and particular disasters (for example, see Allan, Sonwalkar, and Carter 2007; Belair-Gagnon 2015; Dahlgren 2016; Murthy 2011, 2013; Reading 2009; Wall 2015). Van der Haak, Parks, and Castells (2012) identify BBC, The Guardian and Al Jazeera as leading the way in integrating user-generated content in their coverage, and other media have also been studied from this perspective. There is significant attention to the opportunities posed by digital sources and public participation in relief efforts among aid organizations too. Digitization of crises has deeply entered strategic visions of humanitarian organizations: see *World Disasters Report: Focus on Technology and the Future of Humanitarian Action* (IFRC 2013); *Humanitarian Futures for Messaging Apps* (ICRC 2017), *Humanitarianism in the Network Age* (UN OCHA 2013); *Disaster Relief 2.0* (Harvard Humanitarian Initiative 2011) among others. As Kent (2015, 39) notes, the aid sector "has not always recognized that information and communication [can be] a form of aid"; but today there is increasing acknowledgement of the need for "first communicators, not unlike first responders", with citizen journalists joining traditional media in this mission (Novak and Vidoloff 2011, 182).

However, digital changes do not end with the emergence of affected people's eyewitness accounts in crises. A new actor has emerged since the 2010 Haiti earthquake, which does not exactly fit the existing conceptual boundaries of "citizen journalism"—"digital volunteers". They are often called an "informal response community" which includes international online volunteers who contribute to emergency response by "monitoring and responding to social media, creating and updating digital maps, and helping to coordinate relief and recovery" (Hughes and Tapia 2015, 680). While volunteering in disaster response is not new, communication technologies have opened new ways for remote digital volunteering, where the desire to help is combined with personal interest in a particular area or crisis, or motivation to learn new skills in technology and crisis response (see Castillo 2016, 104). Digital volunteers are external to the "formal" relief effort (aid organizations or official emergency response structures), but are active in various types of situations: from disasters and wars to elections and revolutions. Notable examples include Standby Task Force (SBTF, a network of trained online volunteers who provide assistance to humanitarian agencies on request by mapping urgent needs and aid locations), Humanity Road (HR, an organization that monitors social media and helps connect people and emergency officials with help and resources), and Digital Humanitarian Network (a network of volunteer organizations that coordinates information-based support of formal responders). There are several dozen established digital volunteer networks today, most of which train their volunteers to enhance technical skills and coordination in collaborative tasks. All these networks operate with "Big Crisis Data"—the "massive volume of user-generated content publicly shared on social media platforms like Facebook, Twitter, Instagram, and YouTube" (Meier 2015b, 211). One of their major contributions is online crisis mapping—geotagging "crowd-generated data such as social media feeds and photographs, with geographic data … in support of disaster management" (Shanley et al. 2013, 866). They act as an aggregating and processing filter to what, for media, is traditional user-generated content, which is no easy task as only a very small proportion of this content is relevant, contains enough information to be mapped, and can truly inform relief efforts.[1]

Data accuracy, its privacy and security, and the possibility of effective verification are another often mentioned concern. Duffield (2013) notes that big crisis data has a

"neoliberal feel", as it is dependent on a "free market" of information that applies solutions of private software developers to vulnerable people. The amount of false information and rumors circulating online during crises further complicates the task for digital volunteers. Still, they remain optimistic as "verifying Big Crisis Data is far from impossible" (Meier 2015b, 213) and crowdsourcing platforms can also self-correct some of the errors (Goodchild and Li 2012; Park and Johnston 2017). In this sense, digital volunteers provide new opportunities, rather than obstacles to the traditional challenge of obtaining real-time accurate information. Dailey and Starbird (2014, 466) give an example of how a false rumor about a dam breaking down was disproved less than a minute after it was posted, while Meier (2015a, 5–7) describes how locating an incorrectly spelled address and directing a search and rescue team to trapped people relied on the crowdsourced online response. Verification strategies are an important part of digital humanitarian response and include both human solutions (triangulation) and machine computing (Artificial Intelligence for Disaster Response).

Digital volunteers are playing an increasingly visible role in humanitarian response. They significantly helped emergency relief, for example in the 2010 Haiti earthquake, 2014 Ebola crisis, 2015 Nepal earthquake, 2015 European refugee crisis, 2016 Ecuador earthquake, and 2017 Hurricanes Irma and Maria. Hughes and Tapia (2015) predict that professional responders will increasingly rely on digital volunteers in emergencies, even though some organizations still trust traditional sources more (Tapia et al. 2011). The use of social media in crisis response is even wider: from centralized UN and governmental hashtags during 2012 Typhoon Pablo in the Philippines and the Ebola crisis in West Africa (Meier 2014; UN OCHA 2014) to the more spontaneous #PorteOuverte / #OpenDoor hashtag used by the public during 2015 Paris attacks to offer shelter to the people affected (Tikka 2016). With the digitization of crises, media or emergency structures are often not the first to inform: for example, Twitter could be used to detect an earthquake quicker than traditional seismic instruments (Crawford and Finn 2015; Earle, Bowden, and Guy 2011) or identify a cholera epidemic well before the authorities (Ivers and Walton 2012). However, the speed and effectiveness of information dissemination via social media declines at later stages of a crisis as more communications compete for attention (Yoo et al. 2016).

The potential of digital volunteers as a new source of information is much less utilized in media coverage than in the formal humanitarian response. They can be a valuable source, as demonstrated by Tuscaloosa News winning the 2012 Pulitzer Prize for breaking news coverage of the 2011 Alabama tornado which involved live crisis mapping in collaboration with digital volunteers (Humanity Road 2016). Dailey and Starbird (2014) praise a successful transformation of Watershed Post's journalists into leaders of an online volunteer community, benefitting, and improving the coverage of 2011 Hurricane Irene. In both cases, media drew on digital volunteers to report on local rather than major international disasters, showing that these collaborations have not yet become regular. They fulfilled the public's individualized news needs, including localized information on specific disaster-affected zones that major international media would not provide (Murthy 2013). A rarer example of an international collaboration can be found in Internews' coverage of the European refugee crisis, when the media network included data provided to it by SBTF (Internews 2015; Norris 2017). As Lecheler and Kruikemeier (2016) note, in general, digital sources so far have not replaced traditional and elite sources in media practices, partly due to the challenges of verification

and the extra skills this would require. This is a common media concern in employing user-generated content and citizen journalism even if we do not extend the definition to include digital volunteers.

The position of digital volunteers in relation to the more traditional conceptualizations of user-generated content and citizen journalism has also been debated. Wall (2015, 798) defines citizen journalism as news content produced by *non-professionals*, while in the context of disaster coverage, citizen journalism is often understood as content produced and posted on social media by *eyewitnesses* who are *on the ground* (Allan and Peters 2015). The position of a witness is what makes citizen journalism stories powerful and desired. Norris (2017) argues that this understanding of citizen journalism is too limited and should be expanded to include digital humanitarians as "the knowledge-based content produced by these groups is citizen journalism akin to data-driven investigative news". A certain similarity between citizen journalists and digital volunteers is also noted by Aitamurto (2016, 281) who regards both as knowledge-search methods in digital journalism and as a form of *crowdsourcing* that involves "an open call for anyone to participate in a task online".

Still, I suggest that there are two important differences that distinguish digital volunteers (or digital humanitarians) from the more conventional conceptualizations of citizen journalists and make them a newly available digital source. First, the definition of digital volunteers as an "informal response community" is still different from the understanding of non-professionalism in citizen journalism. Digital humanitarian networks depend on volunteers (non-professionals, as opposed to professional "formal" responders), but even the first volunteer networks during the 2010 Haiti crisis developed internal training mechanisms in mapping, data privacy and protection (see Meier 2015a). Today, digital volunteer organizations such as SBTF describe themselves as "trained and experienced volunteers" across 100 countries (STF, n.d.) and have a Code of Conduct, activation protocols and verification procedures. Digital humanitarian networks are becoming increasingly experienced and frequently activated by the formal emergency response. Second, unlike citizen journalists as eyewitnesses on the ground (Andén-Papadopoulos and Pantti 2013; Novak and Vidoloff 2011), digital volunteers do not have to be in the crisis zone itself, witness the events, or be directly exposed to risks. They may still have a connection to the affected community (for example, come from a diaspora or speak the language), but in general, digital humanitarians are an international and remote online network. Therefore, as a distinct digital source, they offer a unique combination of *speed* (providing verified updates that are closer to real-time that any other source) and *safe distance/access* (acting remotely from the crisis location, but producing content that would otherwise be unavailable because of limited or unsafe access). Both criteria can make a significant difference for media reporting.

Assuming Media Roles: Crowdsourcing and Crowdfeeding Crises

In recent years, both formal responders such as aid organizations and NGOs, and digital volunteers have been increasingly taking on journalistic roles themselves. Today aid organizations employ communication teams and produce their own journalistic content which is then distributed to media or directly to audiences via online platforms. NGOs have become part of a "new media ecology" and the boundary between them

and journalists has become blurred (Abbott 2015; Jones 2016). Abbott explains this primarily as the consequence of shrinking foreign news budgets at most media, when lack of media exposure or loss of audience interest have caused a number of crises to be underreported (Ardèvol-Abreu 2015), and consequently, aid efforts to be underfunded. A similar explanation is given by Cottle and Nolan (2007) who observe that in an attempt to keep media attention and media's fundraising potential, aid organizations have quickly learnt to pitch and package stories "in conformity to known media needs". NGOs produce their own journalistic content in an attempt to reach external publics, raise the visibility of their cause and promote policy change (Waisbord 2011). Blurred boundaries between NGOs and media re-orient the aid sector towards new forms of accountability: from reporting to particular donors for particular tasks, to the growing pressure to constantly "look good" to a wide and often undefined audience of policy-makers, campaigners, other organizations, and the public (Jones 2016).

In their own media content, aid organizations are getting increasingly better at including community perspectives and voices from the audience (Abbott 2015)—something that media organizations often struggle to access in a crisis and try to solve by turning to citizen journalism. Yet, there should be an awareness that media and NGOs are pursuing somewhat different interests in their communications: as Lindsey Hilsum, an experienced crisis reporter and International Editor at UK Channel 4 News, put it:

> I get lots of good information from them, but we do have a different job to do. And sometimes humanitarian agencies want to play down the political issues in a particular situation, because they've got to get the food in, or whatever it is. So, they have to be, you know, really nice to Warlord X and Warlord Y, while I don't have to be. And so, I think, you have to be a little bit careful with humanitarian agencies to understand that we are not actually doing the same thing (Hilsum, personal communication, November 9, 2017).

Josephine Fox, former regional information delegate for the IFRC during the Rwanda genocide, confirms that media and agencies' roles do not always overlap:

> I was taking members of the press around all the time, I was explaining to them what was going on [in Rwanda], but I could not publicly be quoted. And that actually was … personally it was very difficult to do that, because it was so clear what was going on. But I couldn't apportion, I mean, even who was responsible for these, you know, for the killings … But all of the press I was dealing with, I am here talking about the internationals, knew the constraints under which the Red Cross was operating in terms of information, and it was a very constructive relationship. So, there was a lot of, particularly with trusted journalists, a lot of information that I shared with them in the off-the-record way (Fox, personal communication, November 4, 2016).

At the same time, there are different purposes that humanitarian agencies pursue in their media communications. As Philippe Stoll, Deputy Head of Public Communication at ICRC notes:

> I think the majority of our interactions from the entire ICRC perspective is focusing on local and non-western media. We have 80 offices around the world and these 80 offices on a daily basis are in contact with local media. My colleague in Myanmar is much more concerned about the press there rather than the BBC or New York Times. They are still important, but for them, what matters is the local media … Our intention

> if we communicate worldwide, is to say: we are well spending the money, we're doing a good job, we are providing lots of support; whereas at the local level it's more like: you can benefit from our assistance, you can get the assistance from that hospital which is meant for you (Stoll, personal communication, December 12, 2016).

Digital volunteers are also increasingly acting as information disseminators themselves, and if we regard this, in a certain sense, as a limited media role, it would be similar to the *local* level communications described by Stoll. As Park and Johnston (2017, 1318) note, "participatory online groups do not only gather disaster and crisis information from the ground but also send the information directly to the affected communities". The process has been called "crowdfeeding", as the reverse of crowdsourcing (Meier 2009). For example, SBTF self-activated and made information available on public story-telling platforms such as Silk.co during the 2016 Ecuador earthquake, although normally it would be activated by and provide information directly to humanitarian agencies. Crisis reports and maps produced and published by digital volunteer networks online could be used by media and the public, as well as humanitarian responders. Per Aarvik, President and General Coordinator at SBTF, describes SBTF actions when it self-activated during the Ecuador earthquake:

> During the Ecuador earthquake we noticed in our monitoring of social media that there were hundreds of small groups who were planning to go to Ecuador with blankets, water, relief. Now, the classic situation is that that kind of stuff piles up in the airport because they haven't managed the full logistical part of the operation. So, we started collecting information about these organizations and created a database on what organization was planning to go where, together with contact information of the responsible people in these organizations, and shared that with the responding community. And we got very positive feedback, they said: "Wow, this kind of information we should have in any crisis"; because it seems to be a major problem, that too many organizations gather unnoticed and try to do something and so get stuck up somewhere. […] So that is what drives us, to believe that yes, there will be room for this kind of organization also in the future. Because information, getting the right information and rapid information is an important part of being able to handle a crisis. (Aarvik, personal communication, November 20, 2017).

The divergence of local and international media focus in covering humanitarian crises also means that different media would be looking for different elements in the digital volunteers' data. While local media's interest may be in the location-specific information and real-time updates about disruptions, needs and available aid, international media that is less familiar with the area may draw on digital humanitarians to construct an overall picture of the crisis, particularly when their access to the field is problematic or delayed. Yet, at the moment, international media tend to mention digital humanitarians as a promise of new technological solutions to overloaded emergency services and aid structures,[2] and only occasionally draw on their data. Per Aarvik attributes this to the media's different interest in the crowdsourced data, although there are some overlapping functions too:

> [Our information] could be interesting for media, but my perception is that they are more after the personalized stories on the ground, if they can get humans involved. Of course, in a certain aspect it might be interesting for the media as well, to get an overview of the total situation in a country … [cut] Media use the same sources as we do,

> so media set up their structures for scanning social media or following Twitter stream … but they might be more targeted in what they would like to use or follow. And our reasons for harvesting social media information are slightly different from the reasons of journalism. They approach each other when you go in the direction of investigative journalism. In the early 2012, we did a test with a tool to map incidents in Syria, it was during the very early stages of the conflict. And that kind of mapping would be very similar to what an investigative journalist would do, or Amnesty, or such groups (Aarvik, personal communication, November 20, 2017).

The crowdfeeding purpose of communication with the media also means that as a new, "informal" actor in communication, digital volunteer networks are at least in part free from the issues that have marked the traditional aid-media relationship:

> The relief industry is under far more pressure than organizations like us: they need media exposure to receive their donations and to keep up the flow of income, so they are far more dependent on popularity mechanisms than, for example, a volunteer network who doesn't care where the money goes, because we do it for free (Aarvik, personal communication, November 20, 2017).

Big crisis data, digital sources, and communication technologies are redrawing the traditional media roles in crises and adding new actors to humanitarian response who occasionally assume media roles themselves. As Hilgartner and Bosk aptly wrote, "public attention is a scarce resource, allocated through competition" (1988, 55). Crowdsourced data processed by digital volunteers can, in some cases, provide much needed speed and localized updates to local journalists; and faster and safer access and an overall picture of the crisis to international media. Yet, as the next section will show, direct communications with humanitarian responders via digital channels are increasingly (and not always justly) entering public expectations, pressing them to further expand their informing and crowdfeeding roles and venture into what would traditionally be seen as media territory.

The Promise of Direct Communication with and by Audiences

New digital channels of communication in crises mean that affected populations are increasingly able to self-organize and to reach out directly to aid providers and international audiences, bypassing traditional state and media constraints. A particularly optimistic vision of this change is proposed by UN Office for the Coordination of Humanitarian Affairs: "On offer is a better model for making humanitarian policy, whereby people determine their own priorities and then communicate them to those who would assist" (UN OCHA 2013, 3). Digital crisis communications are widely regarded as empowering: they give voice to average citizens and communities (Burns 2015; Hughes and Tapia 2015); bring to the forefront voices from developing countries and democratize crisis response (Murthy 2013); enable international spectator audiences to engage in digital humanitarianism as opposed to mere financial donations and previous inability to provide more concrete aid (Meier 2015a; 17); and give NGOs better control over their message (Stoll, personal communication, December 12, 2016). Digital volunteer networks tend to maintain a similar vision of empowerment in their mission statements. For example, Humanity Road, a member of the Digital Humanitarian

Network, is "connecting those who need aid with those who can provide aid" (Digital Humanitarian Network, n.d.). Ushahidi software (initially developed to map Kenyan post-election violence in 2008 and used in many crises since), is "helping [marginalized] people raise their voice" (Ushahidi, n.d.). This opens opportunities for "people-centered humanitarian action" (IFRC 2013, 13) where the power of agents in humanitarian crises is significantly redrawn.

The promise of empowering communities through direct communication, although significant, also needs to be taken critically. Cooper (2015) points out that these optimistic accounts of community inclusion are often "wishful thinking" on behalf of media and NGOs, as digital voices mostly include white, middle class, and privileged groups. Big crisis data reflects the "digital divide", as it contains and can further amplify the geographical (North/South), economic, social, and political contexts of the people producing it (Burns 2015; Madianou 2015) and can therefore be unrepresentative or biased (Aitamurto 2016; IFRC 2013; Murthy 2013). Crises are never the same, but neither are the affected societies themselves, as technological inclusion, pressures from political systems, levels of social trust, and cultural values vary considerably. Asymmetries in social power, such as class, race, and gender, directly impact the presence or absence of digital voices from these groups during crises (Madianou, Longboan, and Ong 2015). Over-reliance on digital voices in humanitarian response can amplify social inequalities and result in "second order disasters" (Madianou 2015) where social media further diminish recovery opportunities for low-income groups and systematically exclude them from aid distribution.

As a promise of direct communication with and by affected communities, digital humanitarianism presents a dilemma: while bringing to light digital voices and individual needs, crisis mapping presents an aggregated, quantitative and largely faceless knowledge of a disaster. Big crisis data contains societal inequalities and captures particular forms of quantitative knowledge while excluding others. Despite rapid digitization of global populations in recent years (see Meier 2015a; 29), smartphone and internet penetration remain uneven across age groups, urban vs. rural areas, countries and other factors (Crawford and Finn 2015). For example, during the 2011 Fukushima nuclear accident, the power of information and communication technologies was overestimated and the more traditional means of communication, such as radio, played a vital role, particularly for the elderly (Kent 2015). Alone, digital crisis data offers a system of knowledge, a "particular disaster imaginary" that prioritizes immediate quantitative knowledge over longer-term contexts, underlying crisis conditions, and other qualitative understandings (Crawford and Finn 2015). In this sense, crisis mapping shares the problems of the larger turn to the remote management of disasters, when the presence and decision-making of aid agencies becomes increasingly virtual (see Duffield 2013). It can create "techno-discursive distance between the observer and the observed", where the complex context and structural causes of the crisis—the "ground truth"—are not fully captured in individual digital voices of those affected and can be overlooked in the seeming objectivity of a dataset (Duffield 2013, 15). Digital knowledge systems about crises are not entirely self-contained and therefore need to be combined with alternative sources of information and methods of needs assessment.

There is also "a disconnect between [overly optimistic] assumptions about technology present in humanitarian policies and the actual uses of technology by affected populations" (Madianou, Longboan, and Ong 2015). They argue on the case of Typhoon

Haiyan that the ability and readiness of the public to participate in the new humanitarian communication formats is dependent on pre-existing parameters, such as the presence of a strong civil society. Besides the existing digital divide and power relations that may prevent participation, create bias and amplify inequality in the first place, unrealistic or inflated expectations from newly available digital channels of communication may cause disillusionment and prevent future participation (Madianou, Longboan, and Ong 2015). For example, in 2011, three quarters of Americans expected emergency responders to monitor social media and act accordingly (American Red Cross 2011), and these numbers would have only grown since. Citizens also increasingly expect emergency responders and digital volunteer groups to reply or interact with them in response to SMS and online calls for help and are discouraged when this does not happen (Madianou, Longboan, and Ong 2015). Per Aarvik adds that misleading expectations also exist on the part of the responding community:

> One challenge is the expectation that we are able to harvest … we met that frustration during Nepal when the flow of information in social media was so massive that some interpreted it as if we could make a full damage assessment on Nepal based on those social media messages, which is not true. Because even if there were thousands and thousands of messages, they did not cover the whole country, they did not cover every village that was destroyed (Aarvik, personal communication, November 20, 2017).

Additionally, big crisis data and human or computational solutions to filtering it could provide better awareness of urgent needs, but do not guarantee successful action. Therefore, empowerment through new digital channels such as digital volunteer networks is only achieved in the presence of a successful formal humanitarian response:

> It [digital volunteering] certainly has the potential for [providing direct communication between the aid sector and the public]. There is a system that UNICEF has developed in Uganda [U-Report], which is an SMS based survey kind of system where they seem to get in really … I think they have something like 300,000 members in Uganda in this SMS service. So that seems to me like a tool with great potential for empowering people. They are into this network and they are able to speak out their opinions or their needs. In best cases, I think yes, crowdsourcing and digital tools can empower people. But you would certainly find cases where … for example, during a disaster, where every need is mapped to the detail, but still no aid is coming in. So, the first step of improvement might be better collaboration between the formal responding organizations and the online communities (Aarvik, personal communication, November 20, 2017).

Digital humanitarians widely regard themselves as "just another tool in the toolbox" of humanitarian response (Burns 2015, 482). Critical perspectives have demonstrated how digital data alone can have mixed effects, but its combination with the formal humanitarian response can be very constructive. A similar argument could be made about their role in media reporting of crises. Digital sources such as digital volunteer networks could indeed offer another (and valuable) addition to the already existing forms of engaging user-generated content. Besides speed and safe access, digital volunteer networks can offer several other advantages to media as facilitators of direct communication.

As an informal and international community of volunteers that crowdsources information directly from the affected community, digital humanitarian networks can

lead to a rethinking of the traditional constraints of the state, political systems, and sovereign borders in both violent crises and disasters. As Lindsey Hilsum remarks, "there is no such thing as a natural disaster, all crises are political" (Hilsum, personal communication, November 9, 2017). Formal humanitarian response has to navigate political complexities of any particular crisis, and media access can also be subject to political pressures. Citizen journalism, which is widely utilized by media in such cases, can also carry political agendas (Wall 2015). Digital humanitarians, although not entirely free from these constraints[3] (for example, state restrictions on certain communication platforms), still largely transcend political barriers. The politics may be hidden in the data— in the "digital divide" of those who post information online or who are absent in the crowdsourced data. Yet, crisis reports of digital volunteer networks rely on the broadest crowdsourcing effort and experience fewer political pressures than the communications of most aid agencies active in the field.

The emergence of digital volunteer networks demonstrates the self-organizing power of both the affected and the spectator communities. In "people-centered humanitarian action", much of this action is carried out by people themselves, particularly in those non-western contexts where emergency structures have been historically unable to fully cope with crises. The new empowerment has deep significance for reshaping media representations, even more so for regions where humanitarian crises and loss of life are typically portrayed as the norm—as "part of the natural order of things, while nothing can be done to change them" (Ardèvol-Abreu 2015, 56). Digital transformations have the potential to reshape the dominant discourse about affected communities, create a more empowered image of these communities in the media, and have a positive effect on the media and aid agencies' ability to draw public attention to some crises:

> I think the ability now to speak to individuals directly in countries, without having to mediate through organizations, is a great step forward … [cut] One of the difficulties I have had all through these years, is this view, that it is a passive victim population in a disaster … What doesn't get reported is the huge resilience that people have in these emergencies, they are not sitting and waiting for aid to come in, couldn't be further from the truth (Fox, personal communication, November 4, 2016).

Thus, the significance of the new digital sources in humanitarian crisis reporting goes beyond the characteristics of these sources themselves as time and access-improving solutions to gathering information. As direct communication with and by audiences (although with some unwanted, as well as desired effects on empowerment), digital humanitarianism questions the traditional roles of state, aid agencies and the public, and consequently, the role of journalism as the medium between them.

Conclusion: A New Role for Journalism?

The rise of social media and citizen journalism has led many to suggest that traditional, professional journalism was facing a crisis and rivalry from online platforms and user-generated content (Dailey and Starbird 2014). The emergence of direct communications between aid agencies, digital humanitarians, and affected populations, and between the affected and donor communities in crises is posing similar questions. But

despite NGOs, aid agencies, and digital humanitarians assuming some of the media functions, the role of media in humanitarian crises has not become obsolete. Media audiences are significantly larger, and media outlets can magnify the reach of humanitarian messages (Abbott 2015). As Waisbord (2011) notes, the relationship between NGOs and media presents neither complete collaboration, nor complete opposition, and it is inaccurate to speak of mutually exclusive rivalry.

What has become obsolete, is the idea of a journalist working alone, as journalism is now part of a network that collects, processes, and disseminates information (van der Haak, Parks, and Castells 2012). There are alternative visions of what the new digital transformations in humanitarian response mean for the role of journalism. Abbott (2015) speaks of increasingly "blurred lines" between aid agencies, media, and advocacy, while Aitamurto (2016) proposes to regard the new communication environments and crowdsourcing as creating "blended responsibility" for data accuracy by both journalists and readers. There are more hierarchical visions too, where journalists retain the dominant position, for example by leading rather than simply taking part in crowdsourcing efforts (Dailey and Starbird 2014) or by focusing on critical, deeper, and more contextualized explanations of crises. All these models suggest some form of collaboration between media and crowdsourced content and agree in predicting the increasing importance of digital humanitarian communications.

This article has argued that the development of digital communications in humanitarian crises, and particularly the emergence of digital volunteer groups and big crisis data, has created new sources of information for both formal responders and media. While the value of digital humanitarians' contribution to emergency response has already attracted significant scholarship, the potential of digital volunteer networks to inform media coverage has been largely overlooked. Digital volunteers propose time-improving solutions to the responding communities, but also offer a unique combination of speed and safer access as a distinct media source, not fully overlapping with the non-professional and eyewitness accounts of citizen journalists. At the same time, the outputs of digital volunteer networks in humanitarian crises are relatively free from some of the issues that have traditionally complicated the aid–media relationship, such as political pressures and constraints on communication, pursuit of fundraising through media exposure, and passive victim representations of those affected. While not unbounded in their ability to empower audiences, digital communications help match aid providers to affected communities, transcend borders, and reshape the roles and powers of traditional agents in humanitarian crises.

These changes are recent and in no way final. In personal communications, humanitarian workers, digital volunteers, and journalists acknowledge multiple possible humanitarian communication futures. Affected communities, their self-organizing potential, availability of response structures, and digital technologies differ significantly between and within western and non-western contexts. The differences in digital humanitarian work in diverse crisis environments, as well as their impact on the state power, media roles, and public empowerment require further critical study. In the absence of a single model, digital transformations vary in their application and effectiveness, and new digital tools are being introduced. Some have described this as an ongoing digital revolution in humanitarian response (Meier 2015a), but it is possible to say that these changes will not be limited to humanitarian response alone. They are

creating new challenges and opportunities for broader societal and political processes that accompany crises, including media reporting.

NOTES

1. Patrick Meier (2015b), who is the co-founder of the Digital Humanitarian Network, gives an example of 2013 Typhoon Yolanda when less than 0,25% of tweets posted in the first several days were helpful and actionable; but even these translated into hundreds of mapped messages. In another source (Meier 2015a, 30) he suggests that these numbers fluctuate significantly, to 10% and 65% of tweets being relevant in other crises.
2. For example, see *Huffington Post* (September 5, 2017); *The Guardian* (December 9, 2014); *BBC World* (November 14, 2013).
3. Here I only speak about digital volunteer efforts in supplying information to aid agencies in humanitarian crises, and not, for example, the more political deployments of digital volunteers, such as election monitoring, political activism, etc. Digital volunteers do not require local governmental permission to access the crisis zone. Their work can also question governmental efficacy as they assist on emergency response, which is a key government function (see Castillo 2016, 101). I do not, however, suggest that these groups lack a worldview.

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