Social Media & Disaster Relief
Responding to Crises in the 21st Century

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As the world becomes more connected, it seems as though disasters and crises hit closer to home. Most people remember a time when the only way to see what was occurring on the other side of the globe was to turn on the television or read the newspaper. Getting online to see what was going on in a place whose name was hard to pronounce was far off. However, it only took one major crisis to set the ball in motion for using social data and communication tools to improve our response time when disaster strikes: the 2010 Haitian earthquake. This horrific event was the catalyst for evolving social media and disaster relief to what it is today: it spawned many of the tools and strategies used by major relief organizations to ensure affected populations received the most beneficial and effective help they can in the shortest amount of time.

This essay seeks to explore the birth of this new response method, its development over the past five years, and the newest advancements in social media in disaster management. Through an analysis of tools, the limitations and failures to social media in disaster management and what should be done in order to make relief efforts more effective will be discussed. The combination of these sources leads to the main argument this paper strives to make, which is that social media has helped revolutionize disaster response and relief. By following the trajectory of social media since the Haitian earthquake, this paper will provide a five-year glimpse at the skyrocketing achievements and innovations social media has made in the effort to improve the response time of disaster relief.

The Birth & Development of Social Media in Disaster Relief

On 12 January 2010, an earthquake registering 7.0 on the Richter scale struck 16 miles west of the Haitian capital, Port au Prince. With 3 million people within a 50 mile radius, the earthquake caused catastrophic damage to infrastructure, interrupted commercial and government services, and resulted in the death of approximately 92,000 people. In the hours and days after the quake, thousands of Haitian residents (and foreign visitors) made phone calls, sent text messages, and created social media posts for assistance. The response changed humanitarian aid forever.

One American, Patrick Meier, back home in Massachusetts feared for the wellbeing of his wife needed to find a way to help and created a "digital 'crisis map'… [similar] to Google Maps… but one that pinpoints areas hardest hit by a disaster and where people who are most affected need help" (Meier, Digital Humanitarians 2). At first, Meier and his team focused on mapping the most pressing messages, ensuring humanitarian efforts would reach them the

fastest. They also utilized Creole-speaking Haitians in the Boston diaspora to help translate SMS messages. As the process continued and word spread, a U.S. search and rescue team and FEMA's Task Force 3 contacted Meier, telling him "take shifts… and [have] counseling support… whatever anyone tells you, don't stop mapping" (Digital Humanitarians 8).

Only nine months after Haiti, Meier and his team created the Standby Volunteer Task Force (SBTF), a group of "humanitarian professionals and experts in geographic information systems (GIS)" (Digital Humanitarians 54). They partnered with the UN on disaster response simulations in Colombia, which led to the creation of rough standard operating procedures, a code of conduct, and a list of "activation criteria"—guidelines for the necessary activation of SBTF (Digital Humanitarian, 54). Their preparation through this partnership progressed at a similar rate to the social networking sites used to gather disaster-related messages. One major realization regarding data collected from disaster affected peoples was that interacting with disaster affected peoples was not their responsibility; the responsibility was on humanitarian organizations themselves (Digital Humanitarians 55). This series of events laid the foundation for crowdsourcing humanitarian groups.

One of the first SBTF assignments was the escalating opposition and violence in Libya in 2011. After being contacted by UN-OCHA to assist organizations on the ground, SBTF launched a crowdsourced crisis map using information provided by Twitter, YouTube, traditional media sources and official humanitarian reports (Meier, "New Information Technologies" 1250). This was the first time the SBTF ran their operations "within the context of a hostile conflict environment" and risked collecting biased information because of sources with specific agendas (Meier, "New Information Technologies" 1254). However, even with these variables, the activation length in Libya and other situations proved it was made for short bursts. Acknowledging this and discussions with the UN led to the creation of the Digital Humanitarian Network (DHN) (Meier, Digital Humanitarians 63). While SBTF focused on partnership with the UN and other humanitarian organizations, DHN's role was to act as the "official interface" between "established" humanitarian organizations and "numerous digital volunteer networks"—directly providing organizations like the UN with the personnel and technological capacity needed to respond to a disaster (Meier, Digital Humanitarians 63). This shift directly affected the response time and efforts to natural and manmade disasters since its inception.

A final development in digital humanitarianism came in November of 2013 as Typhoon Haiyan (also referred to as Yolanda) made landfall over the Philippines. After a solely reactive response to Typhoon Bopha/Pablo in 2012, DHN was activated shortly before Typhoon Haiyan made landfall in 2013; in this newest installment of humanitarian technology, DHN focused on grouping multiple sources together into usable data through microtasking apps, called MicroMappers (Meier, Digital Humanitarians 67-8). These apps allowed digital humanitarians to tag specific information onto the crisis map and forward this onto the relief organizations. As Meier explained, "MicroMappers represents an important shift in the digital humanitarian space. We've now made it as easy as a single click of the mouse to accelerate humanitarian aid" (Digital Humanitarians 71).

New Advancements in Social Media for Disaster Relief

Like any prior technology, social media is continuously adapting to its environment. Since the end

of 2013, advances have drastically improved how we respond to disasters and how the world is informed on the safety and well-being of their loved ones. In tangible terms, over 1 billion people use Facebook, Twitter has "well over" 200 million active users, and roughly 50 billion messages pass through WhatsApp's servers per day (Meier, Digital Humanitarians 27).[1] This broad reach enables users to produce an unimaginable amount of original data that people around the world can see. Meier explains the increasing numbers of social media users signals "disaster affected communities are increasingly becoming 'digital communities'… not only do more people turn to social media to communicate during disasters, they also use these… to self-organize in response to crises—often faster and more efficiently than traditional humanitarian organizations" (Digital Humanitarians 27).

Although Hurricane Sandy occurred in 2012, prior to many recent advancements in social media and disaster relief, it provided humanitarian organizations a unique environment to understand how these tools work in a domestic context—close to digital humanitarian hubs. Similar to prior disasters, digital workers were prepared before the hurricane made landfall. Gloria Huang of the American Red Cross explained in Haiti, nothing could be done with the information, but with Sandy, "we managed to… put a little bit of structure around it… it was our first foray… and we got a lot of feedback" (Collins, 1). They trained their staff and volunteers how to interact with disaster affected peoples, a benefit given the restrictions described above. The combination of traditional humanitarian organizations and modern social media usage proved incredibly beneficial in the digital struggle to reach and assist people in crises.

Most recently depicted during the ISIS attacks in Paris, Facebook has deployed its own "safety check" to check on its users and inform loved ones of their safety. Launched 16 October 2014, Facebook's safety check has a basic, three-step process: 1) asks users about their safety if data shows them as living near a disaster, 2) gives them the opportunity to share their safety status, and 3) lets their friends know they are safe and creates a list of other friends who have listed themselves as safe (Gleit, Zeng, and Cottle 1). The program originally focused on natural disasters, but as engineers have improved the technology, it is planned the software will continue to be used for other types as well. It has been activated eight times between October 2014 and November 2015, with Paris being the first time it was used for a non-natural disaster (Gleit, Zeng, and Cottle 1). Developments such as these not only inform individuals of their family's safety, they can inform law enforcement and potentially humanitarians to assist future micromapping applications.

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Social media has proved it can assist humanitarians in ways traditional media never could. It connects individuals in countries that in the past would have waited hours for an operator and a horrible connection allowing for little to no interaction. As

1 WhatsApp is a messaging app that allows users to send SMS without incurring SMS charges.

the International Federation of the Red Cross noted, "access to information is equally important as access to food, water, and shelter. But information is the most perishable of these commodities" (Meier, Digital Humanitarians 31). By its nature, social media is constantly updating, and there is no way to tell if the information you are reading today is breaking news or if it is weeks, months, or even years old. For this reason and more, there are limitations to social media: the people who use it, the accuracy of the information they provide, and the access are only a few examples of some of the obstacles digital humanitarians face in their effort to save as many lives as possible in a disaster zone.

Limitations and failures to social media in disaster relief

While the progress of social media within and beyond the realm of disaster relief is impressive, we must acknowledge the limitations of its technology. As a global community, we often place impartial, complete trust in online tools to help explain the goings-on in a disaster zone and how we can best address, evaluate, and solve a particular crisis. Unforeseen circumstances can lead to incomplete or skewed data—which puts disaster affected peoples at a higher risk and leaves relief organizations at a loss for what services, tools, and goods are needed. Situations such as these force aid workers and digital humanitarians to reevaluate these online tools.

One of the largest oversights in digital humanitarianism is the limitations to the information provided by social media data sets. For example, in the Philippines, only 36 percent of the population has access to the internet, and during the typhoon, Filipinos experienced "ongoing power outages" and an "18.7 percent drop in relevant tweets two days after the typhoon hit" (Crawford and Finn 492). Although data provided by the 230,000 tweets collected—55,000 of which were "relevant or unique"—was imperative to the response, it showed an inaccurate image of which areas were hardest hit and needed the quickest attention (Crawford and Finn 492). An additional aspect of this is digital inequality. As discussed above, data does not account for the hardest hit areas most. Data is skewed to those who make the most "noise" and the "digital divide," or people who understand the technology well enough to use them and can afford access (Madianou 3). By limiting the scope to those knowledge and access to these social tools, organizations could be missing large groups of people truly in need.

Another limitation to digital humanitarianism is the disaster itself. As discussed by Crawford and Finn, the most prominent definition of a disaster is "an event, concentrated in time and space, in which a society… undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of… the essential functions of the society is prevented" (493). This definition exemplifies the fragility of disasters and in turn, the efforts to relieve those affected by them. Because of this already limited timeframe, social media becomes more fragile due to the "specific time-period" they represent through heightened traffic and the use of "particular hashtags", which limits coverage in a similar way to breaking news and its perceived relevance (493). Finally, this focused lens does not contribute to a longer, more thorough discussion that allows for further research of the spikes in social media activity surrounding disasters (493). It is imperative that the lens be broadened to absorb the entire situation and to assess best practices moving forward.

A third limitation is the demographics of social media users. Similar to the skewed data sets described above, the demographics of websites like

Facebook and Twitter have a direct effect on the type and volume of updates collected when disaster strikes. Regardless of the nation where a disaster occurs, Twitter audiences typically represent a "younger, more urban demographic group" which leaves out "older, less affluent and more vulnerable communities"—often the exact people who need the assistance (Crawford and Finn 496). Madianou discusses this issue in terms of the digital divide, where these vulnerable communities may be "less well equipped to navigate the web [and] are less likely to benefit from any opportunities" (4). By not taking demographics in the affected area or country into account and looking into the social media usage of that population, there are significant chances any data collected, although helpful, could potentially miss dangerous and catastrophic environments that could otherwise have been avoided if these discrepancies in demographics had been accounted for.

One final limitation is whether the collection and production of data is ethical. In countries like the U.S., social media privacy is a controversial debate. However, scholars have avoided the issue of ethics in disaster relief data collection. The debate centers around the idea that social media platforms are public, and platforms allow users to "manage their own settings and engage in informed privacy self-management" and they can truly control their own online security, especially in regards to location information broadcast during disasters (Crawford and Finn 498). Both sides of the issue have valid arguments, but most of the research points to self-management and a general understanding that anything published in an online forum is considered public domain. In a disaster situation, the importance of privacy is often lessened in order to focus on helping and locating those affected (498). These ethical conversations must continue in order to decide on a concrete answer or best practice, but in the current debate and advancements, people's safety and well-being is still prized more than their privacy.

Conclusion

Fortunately, the limitations discussed in the previous section are relatively simple in nature, although complicated in practice. Because of the evolving nature of social media, many of these issues will work themselves out as technology improves and digital humanitarians fine-tune their skills and data collection practices. However, digital humanitarians must acknowledge these issues and participate in research to improve tools to help address these issues and ensure disaster relief operations are as effective and reliable as possible.

One way the digital landscape will change is the access people around the globe have to technology and social media practices. Although the majority of the world possess mobile technology, ownership does not necessarily mean membership on social media. When organizations work with communities with limited internet access, they must find ways to improve access indefinitely or ensure access when disaster strikes. These fixes can provide people in these poorer, often rural areas reach out to the people who can provide them the assistance they need to survive the disaster and rebuild. Additionally, digital humanitarians can provide courses or connections to individuals on the less equipped side of the digital divide to ensure equal access. However, these organizations cannot display favoritism solely because of a lack of access to certain types of technology. This access to technology may be one of the more challenging limitations of social media and disaster relief.

In regards to the physical disasters themselves, there is little social media in disaster relief can do to prevent their occurrence. However, it is imper-

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ative that as technology helps the world predict, react, and respond to disasters, relief efforts keep pace and transform to meet the new, pressing needs of the people affected. The limited scope of disaster coverage through traditional and online media must involve the entire conversation and recognize limited access could prevent some inhabitants from responding to a crisis right away. By broadening collection efforts and utilizing a specific sorting technique, digital humanitarians can ensure the most relevant tweets—not just the ones making the most noise—are used to curate relief efforts.

The most challenging of the limitations presented by social media in disaster relief is the demographics of social media users. Digital humanitarians have no stake in who uses Facebook, Twitter, and other social media, whether personally or as a tool to receive humanitarian aid. Organizations can encourage people with technological access to use these apps and enroll them in courses to help them understand the intricacies of using social media to assist when disaster strikes, but instructing and suggesting is all organizations can do. Many solutions to the demographics issue are similar to access; however, digital humanitarians can use social media demographics to their advantage. By encouraging younger, more active users to help their communities by posting about their own safety and those around them who may struggle to use social media services, humanitarians can better reach those who truly need their help. This can empower the local population to take control of a situation that has stripped them of their basic needs, while rebuilding from whatever crisis has occurred.

The final limitation is in regard to the collection of social data. As the debate over online privacy and self-management continues, it is imperative that social media sites and digital humanitarians create a code of ethics to help users understand where they stand in relation to what can be done with the information they publish and share. This code of ethics would help guide the actions of the volunteers who activate during natural and manmade disasters. As for privacy standards, it is up to social media sites to determine their own, which given its intricacies could be discussed in its own paper. However, for digital humanitarians, the idea of self-management and understanding that any messages linking to the disaster or crisis at hand may be read by strangers thousands of miles away is a challenge that must be overcome in order to maintain the trust of the communities they serve. Ultimately, this level of trust is what traditional, modern, and digital humanitarians should aim for: mutual trust and respect between those assisting and those in need of assistance is the key to quality, beneficial aid reaching the people who need it in a safe, efficient manner.

Social media will continue to evolve as a communication tool in the general workings of society, but advancements in mobile, media, and information technologies have the potential to assist disaster relief in new and unique ways. To traditional humanitarians' chagrin, the digital humanitarian network and the thousands of volunteers it comprises are not going anywhere. Their skills and contribu-

tions to the field of international development and humanitarian aid are too many to tell them to stop what they are doing and walk away from the fight.

This unique combination of humans and technology has the capacity to change the world as we know it. Through improving the technology we use, the ways it can be accessed, and the ease with which we use it, there is no telling what the next improvements to digital humanitarianism will be. But as Meier so eloquently explains, "anyone can be a digital humanitarian, absolutely no experience necessary; all you need is a big heart and access to the internet" (Digital Humanitarians 1).