Technoethics and Human Rights: The Metaethical Implications of Crisismapping and the Right to Privacy in Post-Disaster, Post-Conflict Scenarios

Nicole Rodgers

ABSTRACT

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Nicole Rodgers

Do invasive digital approaches to disaster response come at too high of a cost to privacy, such that we should seek alternative methods or regulations? This paper examines the tension between the right to privacy and crisismapping, a new technological advancement in emergency response. After mapping the critical international institutions and stakeholders, the paper grounds interests to effective triage and to digital privacy in international human rights law. A thought experiment is offered to show our conflicting intuitions when privacy is weighed against critical safety interests, and multiple procedures are evaluated as means to reconcile these interests and determine the extent of the right to privacy. Ultimately, the paper calls for an expanded inquiry by the United Nations Special Rapporteur on the Right to Privacy, who has the power to engage multiple stakeholders for a fair and inclusive new approach. Privacy costs are too fundamental for emergency response to proceed without proper scrutiny.

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[1] Patrick Meier, *Crisismapping: Haiti*. 2012. Irrevolution, (Accessed October 03, 2018.) http://blog.nationalgeographic.org2012/07/02/crisis-mapping-haiti/.

[2] Windsock92. *Surveillance Cameras Mapped.png*. 2014. OpenStreetMap, Wikimedia Commons, Https://commons.wikimedia.org/wiki/File:Surveillance_cameras_mapped.png. In *Wikimedia Commons*. (Accessed October 03, 2018.) Surveillance cameras mapped.png.

[3] Patrick Meier *Crisismapping: PyBossa Microtasking OCHA Pablo Map*. 2012. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2016/04/pablo_un_map.png?w=1000&h=756.

[4] Patrick Meier *Crisismapping: Gdelt-output*. 2014. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2014/12/mm-gdelt-output.png.

[5] Patrick Meier *Crisismapping: Micromappers Platform*. 2013. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2013/11/screen-shot-2013-11-18-at-2-15-21-am.png.

[6] Patrick Meier, *Crisismapping: Mapping Migration via Cell Phone, Social Media Tracking Hurricane Sandy*. 2013. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2014/11/screen-shot-2014-11-30-at-5-05-14-pm.png.

[7] Patrick Meier, *Crisismapping: Facebook Safety Check Wildfires Fort McMurray*. 2012. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2017/06/safety_check_progression-1.png?w=1000&h=374.

[8] Patrick Meier, *Crisismapping: Microsoft CrowdMapper Typhoon Bopha*. 2012. Irrevolution, (Accessed October 03, 2018.) https://irevolution.files.wordpress.com/2016/04/screen-shot-2016-04-20-at-11-12-36-am.png?w=1000&h=506.

1. Introduction

Figure 1.1 Ushahidi Crisismap of Haiti

In 2010, a Ph.D. candidate studying at Tufts University set up a network of people and technological mechanisms to save people trapped in Haiti after a 7.0 earthquake, the fifth deadliest natural disaster on record.[1] This crowdsourced deployment grew from his dorm room—where he used publicly available tweets to place their locations on a map—to include international collaboration with a mapping platform previously used to document elections violence in Kenya. Together, these digital entrepreneurs helped aid forces respond on the ground in Haiti, including the U.S. Coast Guard telecommunications agencies.[2]

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[1] "Crisis Mapping and Early Warning | Harvard Humanitarian" Harvard Humanitarian Initiative, OCHA. 2013. (Accessed September 05, 2018.) https://hhi.harvard.edu/resources/crisis-mapping-and-early-warning.; Patrick Meier, "How Crisis Mapping Saved Lives in Haiti." National Geographic Society Newsroom. December 14, 2017. (Accessed January 03, 2019.) https://blog.nationalgeographic.org/2012/07/02/how-crisis-mapping-saved-lives-in-haiti/.; Patrick Meier, "Haiti and the Power of Crowdsourcing." IRevolutions. April 07, 2010. (Accessed November 11, 2018.) https://irevolutions.org/2010/01/26/haiti-power-of-crowdsourcing/.

[2] "Crowdsourcing Earthquake Detection: Smartphones to the Rescue." Science Node. 2015. (Accessed September 21, 2018.) https://sciencenode.org/spotlight/crowdsourcing-earthquake-detection-smartphones-rescue.php

This was the start of "crisismapping," and a technology that has grown in the decade since to include collection and curation of multiple sources of digital media—from satellite imagery to social-media posts. This is one way that multiple technologies have been combined to help save lives through faster response during emergencies and natural disasters, when timely response can mean the difference between life and death. As technologies have advanced and more actors have become involved, questions of legality and permissible invasions of privacy arise. While no one would deny the importance of timely disaster response, clear privacy concerns when multimedia sources are combined to precisely locate and identify individuals. Are there limitations on the methods that international agencies and their partners can use to effectively respond to disasters and other emergencies? If so, how should international agencies decide when interventions come at too high a cost?[3] Ultimately, this paper seeks to answer a core question at the intersection of privacy and emergency response: Do the invasive methods used to conduct the most effective triage come at too high of a cost to privacy, such that we should seek alternative methods or regulations?

There are more cell phones in the world than there are people, and those phones have the ability to connect people to each other and to information in ways that have never before been possible.[4] Mobile banking, mobile health, access to information, identification instruments, gig-economy work, and simple connections to family and friends are some of the many

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[3] Joel R. Reidenberg, "Resolving Conflicting International Data Privacy Rules in Cyberspace." *Stanford Law Review* 52, no. 5 (May 2000): 1315. (Accessed October 05, 2018.) doi:10.2307/1229516.

[4] Zachary Davies Boren, "There Are Officially More Mobile Devices than People in the World." The Independent. October 07, 2014. (Accessed November 09, 2018.) https://www.independent.co.uk/life-style/gadgets-and-tech/news/there-are-officially-more-mobile-devices-than-people-in-the-world-9780518.html.

beneficial ways that cellular phones expand connectedness.[5] More than a quarter of the world's population got online for the first time in 2017, and more people become connected daily.[6] With more people connected in more ways than ever, opportunities arise to track people according to the digital footprints they leave on these sites.[7]

As it stands, due to gray areas at the forefront of technology policy, there is no standard approach to balancing questions weighing the humanitarian benefits of these technologies against the right to privacy and the strong interests in avoiding surveillance.[8] Privacy is much debated at all levels of governance today, but its application and expansion must race to fit the new realities that technology advancement brings. Expanding and evolving understandings of privacy leave many gaps not just the legislation, but also in the protocols under which governments and the highest-level international organizations operate on the ground. Limited conceptions of liberty and privacy have real consequences that make it difficult for people to operate in their daily lives with assurance that their privacy interests are protected. This becomes an even more difficult discussion when we apply current privacy protections to governments and international actors responding in emergency triage operations, where the interests in effective response are the most compelling.

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[5] "MOBILE PHONE NETWORK DATA FOR DEVELOPMENT." United Nations Global Pulse. 2013. (Accessed November 1, 2018). http://www.unglobalpulse.org/sites/default/files/Mobile Data for Development Primer_Oct2013.pdf.

[6] "Digital in 2018: World's Internet Users Pass the 4 Billion Mark." We Are Social. January 30, 2018. (Accessed October 06, 2018.) https://wearesocial.com/blog/2018/01/global-digital-report-2018.

[7] Jae Ho Seo, "Mapping for Safety Management - Characteristics of Spatial Safety Information and Safety Map -." *Crisis and Emergency Management* 13, no. 2 (2017): 68. (Accessed September 2018.) doi:10.14251/crisisonomy.2017.13.2.67.; Brendan Meeder, et al. "IWantPrivacy : Widespread Violation of Privacy Settings in the Twitter Social Network." *Web 2.0 Security and Privacy*, 2010. (Accessed September 21, 2018.) https://pdfs.semanticscholar.org/8866/c2e0bdbfc060cd0957a6eab461ee4178f8e8.pdf?_ga=2.236866247.750060420. 1545034705-1585093712.1545034705.

[8] Abaas Maaroof "BIG DATA AND THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT." Environment and Development Policy Section. December 2015. (Accessed November 11, 2018.) https://www.unescap.org/sites/default/files/Final Draft_ stock-taking report_For Comment_301115.pdf.

One only need to look at the news to see that there are more than whispers and rumblings about threats to our digital safety. Headlines warn of comprehensive profiles built for political purposes: "Data mining firm behind Trump election built psychological profiles of every American voter."[9] Fears spike with each data breach, where leaks of sensitive information and passwords, such as the leak of 6.5 million user passwords from the professional networking site LinkedIn, raise new public awareness of their digital exposure.[10]

Everywhere digital privacy concerns are at the fore as technologists plumb the depths of the concerns behind emerging technologies and their uses.[11] This goes beyond the concerns of "big data"—large aggregate data sets that enable many cross-sections of data analysis—and enters into the realm of personal privacy and the digital trails that our connected lives leave. "Digital footprints"—both passive and active trails of data and information that a person leaves online while using internet-connected technologies—allow an alarmingly accurate view of people's daily actions and thoughts. A passive digital footprint is the information trail that a person leaves while using these technologies without the intention or knowledge that they have done so. Collecting the information contained in these active and passive digital footprints to serve disaster response raises all of the privacy concerns common in these debates, even if the countervailing interests are that much stronger in the chaotic dangers of an emergency.

[9] Brent Bambury, "Data Mining Firm behind Trump Election Built Psychological Profiles of Nearly Every American Voter | CBC Radio." CBCnews. March 20, 2018. (Accessed October 10, 2018.) https://www.cbc.ca/radio/day6/episode-359-harvey-weinstein-a-stock-market-for-sneakers-trump-s-data-mining-the-curious-incident-more-1.4348278/data-mining-firm-behind-trump-election-built-psychological-profiles-of-nearly-every-american-voter-1.4348283.

[10] "An Update on LinkedIn Member Passwords Compromised." LinkedIn Recent Posts. (Accessed November 02, 2018.) https://blog.linkedin.com/2012/06/06/linkedin-member-passwords-compromised;, Steve Andriole, "Is Digital Privacy A Right Or A Privilege?" Forbes. April 08, 2017. (Accessed December 17, 2018.) https://www.forbes.com/sites/steveandriole/2017/04/07/is-digital-privacy-a-right-or-a-privilege/#609c724248cf.

[11] Stephanie K. Pell, "Jonesing for a Privacy Mandate, Getting a Technology Fix -- Doctrine to Follow." *Privacy in a Cyber Age* 14, no. 2 (May 10, 2013): 489-556. (Accessed September 10, 2018.) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2262397.

To understand the concerns and violations at stake, section 2 will survey the traditional relationship between data analysis and privacy. Section 3 will offer a brief history of crisismapping, with a special eye to identifying the characteristics of the technology that contribute to disaster recovery and also threaten privacy interests. Section 4 will consider the right to privacy and related rights under international human rights law. Section 5 will look at privacy interests under European law, using this particularly advanced legal code to frame the issues at stake in the international realm. Section 6 considers the particular interest at stake with particular focus on grounding interests in timely triage and privacy costs. Section 7 identifies the main players in the debate—the stakeholders and institutions that play a large role in weighing privacy rights at the international level. Section 8 explores the complaint procedure of the most important actor in the field—the Special Rapporteur on the Right to Privacy and offers a sample complaint that could initiate an inquiry into privacy rights in crisismapping. Section 9 offers a thought experiment and explores four alternative decision procedures, ultimately arguing that weighing these interests through a Special Rapporteur is the best approach in practice. Section 10 emphasizes the exigence of these issues, calling for the Special Rapporteur to take them up in its newest mandate. Section 11 concludes, reiterating the importance of privacy and calling for diverse voices to be included in the final decision procedure.
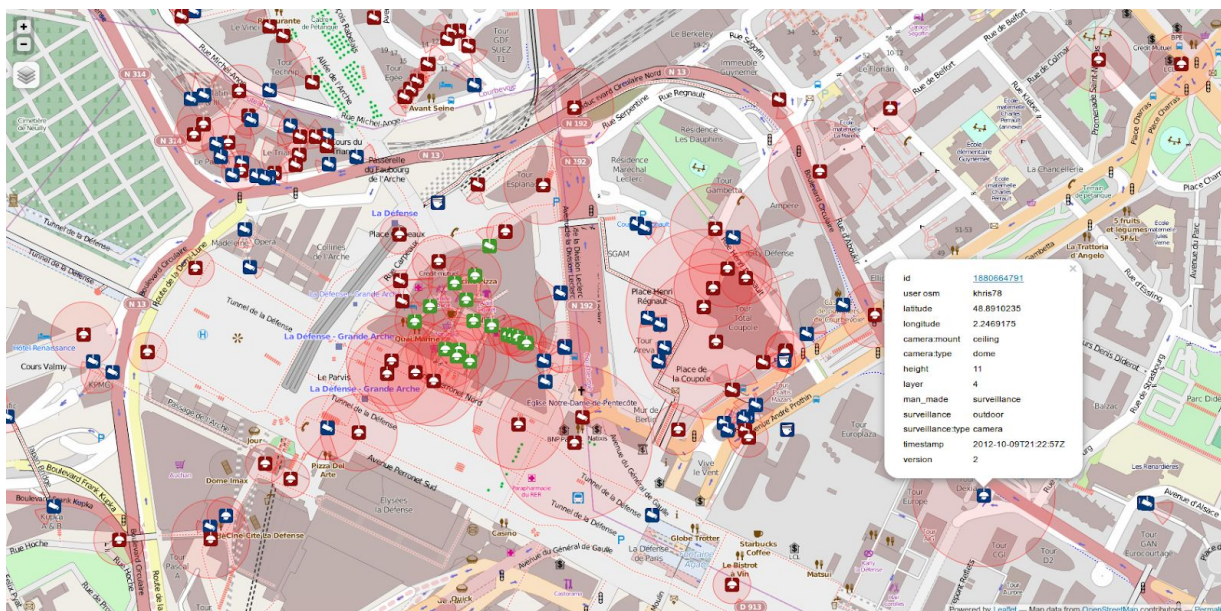
Figure 2.1 Crowdsourced OpenStreetMap Map of Surveillance Cameras: La Grande Arche de la Défense in France

2. Data Analysis and Privacy

Improving aid response with data analysis is not novel. After every event, data analysis is used to evaluate what worked and what did not, identifying potential hindrances along the way. Most organizations analyze data to build capacity, streamlining internal workflows so that time and resources are apportioned in the most efficient ways for future disasters. In the aftermath of a crisis, analysis of social-media posts can be used in conjunction with other data to track response efforts and improve preparedness.[12] The Red Cross, for example, used Facebook posts to track how and where citizens found shelter during storms and how long it took them to return home as a way to help local agencies hone future response efforts.[13] Hyper-local data analytics identifying vulnerable population hotspots, including elderly communities, schools, and hospitals, can shape

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[12] Ho Keat Leng, "Methodological Issues in Using Data from Social Networking Sites." *Cyberpsychology, Behavior, and Social Networking* 16, no. 9 (2013): 686-89. (Accessed October 11, 2018.) doi:10.1089/cyber.2012.0355.

[13] *International Federation of the Red Cross and Red Crescent Societies 2005 World Disaster Report*. Report. IFRC. Geneva, Switzerland: IFRC, 2005. 1-258. (Accessed October 11, 2018.)

response strategies and help move at-risk populations to safety.[14] Thus, data analysis itself is nothing new, but with the utilization of private information as one of the inputs for crisismapping, new questions of moral permissibility arise. This section will briefly introduce some of the more pressing human rights concerns before unpacking the technology and its present use in emergency response.

Helping Hands

Is it ethical to violate an individual's privacy by harvesting information from their mobile presence—cellphone geodata, social-media posts, and text messages—to save lives during an emergency? Thus far, many supranational aid agencies have decided it is, but they have not offered clear boundaries where it is and is not permissible.[15] As a society, we might accept the idea of using a person's digital footprint to coalesce drone imagery and mobile-phone records to track elephant poaching, or using social media data to manage forest and peat fires in Indonesia, or even using combined data analysis along with satellite imagery to analyze information on agricultural water management for the Food and Agriculture Organization.[16] We might feel a bit uneasy though when things get a bit murkier, such as when mobile phone data is collected to

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[14] Intelligence Unit. "Improving Disaster Response Efforts through Data." The Economist. 2018. (Accessed March 18, 2019.) https://expectexceptional.economist.com/improving-disaster-response-efforts-through-data.html?lipi=urn:li:page:d_flagship3_profile_view_base_recent_activity_details_all;Bj5uUcpKRNCrLosoLZ4nJA==.

[15] Stefania Grottola and Cedric Amon. "High-level Roundtable on 'Impact of Rapid Technological Change on the Achievement of the Sustainable Development Goals'." Report for Event Commission on Science and Technology for Development – 21st Session. 2018. (Accessed October 05, 2018.) https://dig.watch/resources/high-level-roundtable-'impact-rapid-technological-change-achievement-sustainable.

[16] "Big Data for Development and Humanitarian Action: Towards Responsible Governance." Big Data for Development and Humanitarian Action Report: Global Pulse Privacy Advisory Group Meetings. October 2015. (Accessed November 11, 2018.) http://unglobalpulse.org/sites/default/files/Big_Data_for_Development_and_Humanitarian_Action_Report_Final_0.pdf.; Jim Villasenor, "OBSERVATIONS FROM ABOVE: UNMANNED AIRCRAFT SYSTEMS AND PRIVACY." *Harvard Journal of Law & Public Policy* 65, no. 10 (2014): 36-43. (Accessed August 2018.) http://www.harvard-jlpp.com/wp-content/uploads/2013/04/36_2_457_Villasenor.pdf.; Uri Volovelsky, "Civilian Uses of Unmanned Aerial Vehicles and the Threat to the Right to Privacy – An Israeli Case Study." *Computer Law & Security Review* 30, no. 3 (2014): 306-20. (Accessed October 21, 2018.) doi:10.1016/j.clsr.2014.03.008.

track seasonal migration of human populations in Senegal, where movement patterns among population groups were extracted and visualized, resulting in a series of mobility profiles used by the World Food Programme and others.[17] The boundaries of permissibility might be murkier still when attempting to use social media to explore HIV and HIV-related stigma. For example, the United Nations Programme on HIV and AIDS campaign explored whether tweets could be used to measure HIV-related stigma to determine whether discrimination makes people less likely to access healthcare, use condoms, get HIV tests, or use antiretrovirals.[18] Even more discomfort arises when we consider the ethical considerations of mapping poverty in China using mobile-phone records, and we learn that facial recognition is used to locate and intern over 11 million Uighur and muslim minorities into "rehabilitation camps."[19]

Why should these issues give us pause? It is clear that some discomfort arises when invasions threaten our concept of liberty, which, along with the concept of dignity, provides the backbone of the human rights regime. Born out of the 1949 Universal Declaration of Human Rights (UDHR) and becoming codified with the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), our contemporary views of liberty stem from freedom and autonomy. Part of the ability to act freely, of our own will, lies in the rights and protections surrounding both privacy and freedom of expression, through which other rights are able to be realized. The trust

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[17] "Big Data for Development and Humanitarian Action" October 2015. (Accessed November 11, 2018.)
[18] Ibid.
[19] "BIG DATA FOR DEVELOPMENT: A PRIMER - Home | United Nations ..." United Nations Global Pulse. 2013. (Accessed October 05, 2018.) http://www.unglobalpulse.org/sites/default/files/Primer 2013_FINAL FOR PRINT.pdf. pp. 40-41; Paul Mozur, "One Month, 500,000 Face Scans: How China Is Using A.I. to Profile a Minority." The New York Times. April 14, 2019. (Accessed April 16, 2019.) https://www.nytimes.com/2019/04/14/technology/china-surveillance-artificial-intelligence-racial-profiling.html.

component ensures protection of fundamental interests—the essence of the right to privacy—a necessary factor for citizens to live and act freely.[20]

A newer use of these connected technologies threatens not just our right to privacy, but also the right to freedom of expression and liberty more generally. The collection, use, and dissemination of citizen's digital information without her knowledge to better inform emergency response and triage is known as "crisismapping." While it has revolutionized the way that emergency response is realized, it threatens fundamental freedoms and human rights, operating in a gray area of permissibility due to its relative obscurity and the leeway that States are given during disasters and emergencies.

With a better idea of the issues at hand, the next section will thoroughly explain the basic components of crisismapping to contextualize and understand why technology that can provide such help can also be invasive and undermine liberty.[21]

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[20] Michael Pollitt, "The Economics of Trust, Norms and Networks." Business and Ethics: A European Review. December 13, 2003. (Accessed August 28, 2018.) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=312077.
[21] "Report on the Surveillance Program Operated Pursuant to Section 702 of the Foreign Intelligence Surveillance Act." The Privacy and Civil Liberties Oversight Board. July 02, 2014. (Accessed November 06, 2018.) https://www.pclob.gov/library/702-Report.pdf.
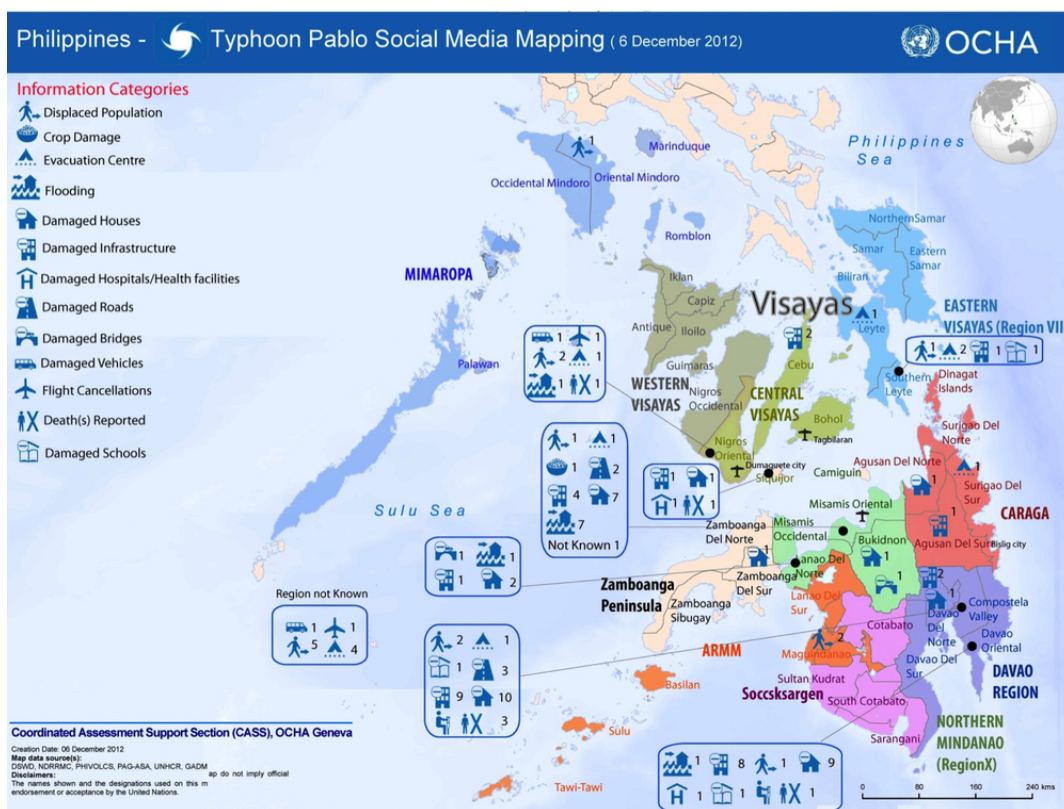
Figure 3.1 PyBossa OCHA Social Media Crisismap of Typhoon Pablo

3. Crisismapping

Within seven minutes of the onset of a natural disaster, it is trending on the internet, permeating social media outlets and search engines.[22] Partially, this online traffic stems from the general human desire to be informed of what is happening; the other, more critical part, comes from people trying to find information about relief efforts. Those in disasters reach out trying to get help, find emergency services near them, alert those services, find a route to safety, or collect supplies to shelter in place. They also connect with friends and family to either find them, be

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[22] Jennifer Chan, and John Crowley. "Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies - World." Harvard Humanitarian Initiative, OCHA. January 2011. (Accessed September 11, 2018.) https://hhi.harvard.edu/sites/default/files/publications/disaster-relief-2.0.pdf.

found, or assure them that they are safe, using the technological mechanisms at their fingertips to facilitate communication.[23]

"Crisismapping," the term given to the collection, curation, identification, verification, and geolocation of these technological instances, creates an actual "map" to display what instances are happening where and when, and then disseminates this map to interested parties. Interested parties include governments, international aid agencies, NGOs, and various branches of the United Nations.[24] In order to better understand the interests to be balanced, this section will overview different components of crisismapping. As the technology is ever changing, an exhaustive recounting is deliberately bypassed and instead the most common technologies and protocols are discussed.

As the benefits of the utilization of these technologies became clearer, aid agencies began to incorporate these processes and data mining into their workflows to save time and resources and to give a more accurate, real-time picture of the state of affairs.[25] To be clear, the hours immediately after a disaster are key to saving people's lives, and every hour after the event, the chance of rescuing those who need life-saving medical attention goes down.[26]

General

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[23] Walter Pfannkuche, "Humanitarian Interventions and Other Duties to Humanitarian Aid." *Ethics of Humanitarian Interventions* 4 (September 15, 2004): 20, 89, 99. (Accessed September 10, 2018.) doi:10.1515/9783110327731.115.

[24] Steav. "Crisismapping -." Crisismapping. (Accessed September 2018). http://crisismapping.net/.; Henshall, Adam. "What Is Digital Ethics?: 10 Key Issues Which Will Shape Our Future." Process Street. September 25, 2018. (Accessed October 05, 2018.) https://www.process.st/digital-ethics/.

[25] Patrick Meier, "Digital Humanitarians, Big Data and Disaster Response." Brookings.edu. July 29, 2016. (Accessed September 04, 2018.)

[26] Mireille Hildebrandt, "Location Data, Purpose Binding and Contextual Integrity: What's the Message?" *Protection of Information and the Right to Privacy - A New Equilibrium? Law, Governance and Technology Series*, 2014, 31. (Accessed September 01, 2018). doi:10.1007/978-3-319-05720-0_3.; Shadi Elbassouni, et al. "Extracting Information Nuggets from Disaster- Related ..." ISCRAM Conference Proceedings. 2015. 1. (Accessed October 11, 2018.)
http://chato.cl/papers/imran_elbassuoni_castillo_diaz_meier_2013_extracting_information_nuggets_disasters.pdf.

The processes involved in crisismapping have origin stories that are as vast and diverse as the media used. Digital maps are made from the information that is collected, including information about impassable areas, places where temporary medical services have been sent, actionable instances of people trapped or in need, hot-spots showing where people have congregated, and more.[27]

GIS incorporation (geographic information systems, or more simply map making) is a pivotal measure of real-time situational awareness.[28] The use for humanitarian triage response arguably started with Patrick Meier, the Ph.D. student mentioned earlier. Meier was unable to get information during the 2010 Haitian earthquake.[29] A student in Boston, he was hungry for information about his wife, who was in Haiti doing work at the time. Meier looked to Twitter to find any information he could related to the Haitian earthquake, and he started to plot those instances on a map. He reached out to friends and colleagues, setting up networks of people and organizations to build this capacity, incorporating people from his university to translate the messages from French and Haitian Creole into English. Within days, they posted a phone number for people to text in information. These text messages were translated and geolocated through this volunteer network.[30]

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[27] National Geographic Society, and Patrick Meier. "Patrick Meier: Crisis Mapping." National Geographic Society. November 09, 2012. (Accessed September 03, 2018.) https://www.nationalgeographic.org/media/patrick-meier-crisis-mapping/.

[28] Simcha Levental, "A New Geospatial Services Framework: How Disaster ..." Journal of Map & Geography Libraries. May 09, 2012. (Accessed September 03, 2018.) http://www.tandfonline.com/doi/full/10.1080/15420353.2012.670084.

[29] "Mapping the Void - BBC Sounds." BBC News. 2015. (Accessed January 03, 2019.) https://www.bbc.co.uk/sounds/play/b03s6mf0.

[30] Piers Fawkes, "Future of Real-Time Information." United Nations Global Pulse. 2011. 27. (Accessed October 05, 2018.) https://www.unglobalpulse.org/projects/report-future-real-time-2011.; Levental, "A New Geospatial Services Framework: How Disaster ..." May 09, 2012. (Accessed September 03, 2018.)

This open-sourced, crowdsourced information utilized large amounts of data, some available to everyone—who knew where to look for it—and some available only to those involved in an organizational capacity.[31] These instances were curated and then "mapped" using Ushahidi, a digital mapping platform that had previously been used to map instances of violence during the Kenyan presidential elections. The maps were disseminated to interested parties who were responding to the earthquake and were updated in a "real-time" manner, meaning that the maps were updated to show the most accurate information at the time. Mining software and collaborations with technology companies provided information about search engine searches, revealing terms and locations of the searches and informing data points in the process.[32]

This process holds true today, where monitoring and evaluation during emergencies happens from the collection of data from mixed platforms, with varying accessibility permissions.[33] Social media makes an easy source to locate and curate information, as multiple people are already use these platforms in their daily lives.[34] "The value of social media is strongest at the onset of a disaster, when the event is not anticipated and it is diffuse in geographic terms," argues Carlos Castillo, a research professor at Barcelona's Universitat

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[31] Stuart E. Middleton, Lee Middleton, and Stefano Modafferi. "Real-Time Crisis Mapping of Natural Disasters Using Social Media." IEEE Intelligent Systems: Volume 29, Issue 2 Real-Time Crisis Mapping of Natural Disasters Using Social Media - IEEE Journals & Magazine. March 2014. (Accessed January 03, 2019.) https://ieeexplore.ieee.org/abstract/document/6692841/figures#figures.

[32] David Streitfeld, "Tech Giants, Once Seen as Saviors, Are Now Viewed as Threats." The New York Times. October 12, 2017. (Accessed September 1, 2018.) https://www.nytimes.com/2017/10/12/technology/tech-giants-threats.html.

[33] Michael Bamberger, "INTO THE MONITORING AND EVALUATION OF DEVELOPMENT PROGRAMMES." United Nations Global Pulse. 2016. (Accessed September 11, 2018.) http://unglobalpulse.org/sites/default/files/IntegratingBigData_intoMEDP_web_UNGP.pdf.

[34] Chris James Carter, et al. "Understanding Academic Attitudes towards the Ethical Challenges Posed by Social Media Research." *ACM SIGCAS Computers and Society* 45, no. 3 (2016): 208. (Accessed September 14, 2018.) doi:10.1145/2874239.2874268.

Pompeu Fabra.[35] "In these events, social media is often the first and only information accessible, and it is provided by witnesses on-the-ground as the event unfolds."[36]

Of these sources of information, Facebook and Twitter are the most valuable. They contain large numbers of users and the companies have worked with aid agencies and States to share information.[37] Twitter, a microblogging social-media platform where many people use hashtag symbols in order to make terms searchable, contributes to the information by enabling a large network of interested parties to search terms during disasters. Large data sets are collected by volunteers and computer programs, engaged in data mining. The information is then curated via shared-working platforms, such as Google Documents, Excel, and Google Sheets. Information is fed through artificial-intelligence software, along with information garnered from donated satellites, drones, telecommunications industry information, and other sources.[38] A series of filter remove potential duplicates and messages that offer no actionable items, such as those expressing well wishes or shock.[39] The information is then disseminated digitally via different platforms, including through cellular phones, tablets, laptop computers, "smart" watches, and websites.

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[35] Intelligence Unit. "Improving Disaster Response Efforts through Data." The Economist. 2018. (Accessed March 18, 2019.) https://expectexceptional.economist.com/improving-disaster-response-efforts-through-data.html?lipi=urn:li:page:d_f lagship3_profile_view_base_recent_activity_details_all;Bj5uUcpKRNCrLosoLZ4nJA==.

[36] Intelligence Unit. The Economist. 2018. (Accessed March 18, 2019.)

[37] Stuart E. Middleton, et al. "Real-Time Crisis Mapping of Natural Disasters Using Social Media."

[38] Patrick Meier, "How Crisis Mapping Saved Lives in Haiti." National Geographic Society Newsroom. December 14, 2017. (Accessed January 03, 2019.) https://blog.nationalgeographic.org/2012/07/02/how-crisis-mapping-saved-lives-in-haiti/.; Nguyen Hoang Thuan, Pedro Antunes, and David Johnstone. "Factors Influencing the Decision to Crowdsource." *Lecture Notes in Computer Science Collaboration and Technology*, 2013, 110, 115. (Accessed September 2018.) doi:10.1007/978-3-642-41347-6_9.

[39] Patrick Meier, "Haiti and the Power of Crowdsourcing." IRevolutions. April 07, 2010. (Accessed November 11, 2018.) https://irevolutions.org/2010/01/26/haiti-power-of-crowdsourcing/.

Disaster victims utilize the same technology to send words, pictures, audio clips, and videos of what has happened, where they are, and what they need to the outside world. Each source has varying degrees of quality and range, capturing different bits of information. In addition, the activity of cellular towers and satellites can identify usage, including increases or decreases over time.[40] Mobile phones, wireless internet, and hotspots all allow people to disseminate information across social-media platforms.[41] Drones provide a level of imagery that was unfathomable even a few years ago, and they can be deployed locally by those already on the ground.[42] What took weeks for outside workers assess can now be done in a matter of minutes to hours with the same or better clarity. Satellites can peer down from space, viewing changes within moments of a disaster to assess the situation and immediately disseminate those images globally.

Collectively, and including other useful technologies, this aggregated information creates the most accurate real-time situational awareness to date, and that information saves lives faster, better, and with far more success than traditional triage methods.[43] While this introduction has described crisismapping for humanitarian causes, the technology may be used for less worthy ends, ranging from tacit misuse of data to deliberate human rights abuses by governments and agencies. The uses of the information collected may extend far beyond the life-cycle of the

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[40] "United Nations Human Rights Council." OHCHR | Access Now's Primer: Primer on Internet Shutdowns and the Law. November 2016. (Accessed October 01, 2018.) https://www.ohchr.org/_layouts/15/WopiFrame.aspx?sourcedoc=/Documents/Issues/Expression/Telecommunications/AccessPart_I.docx&action=default&DefaultItemOpen=1.

[41] Jennifer Chan, and John Crowley. "Disaster Relief 2.0." January 2011. (Accessed September 11, 2018.)

[42] Rocci Luppicini, and Arthur So. "A Technoethical Review of Commercial Drone Use in the Context of Governance, Ethics, and Privacy." *Technology in Society* 46 (2016): 109, 111. (Accessed September 02, 2018.) doi:10.1016/j.techsoc.2016.03.003.; Alessia Vacca, and Hiroko Onishi. "Drones: Military Weapons, Surveillance or Mapping Tools for Environmental Monitoring? The Need for Legal Framework Is Required." *Transportation Research Procedia* 25 (July 10, 2017): 51, 58. (Accessed October 01, 2018). doi:10.1016/j.trpro.2017.05.209.

[43] Peter B. Heller, "Technoethics." *International Journal of Technoethics* 3, no. 1 (2012): 14-27. (Accessed October 11, 2018.) doi:10.4018/jte.2012010102.

disaster and triage phases, and it can be and has been used for purposes other than delivering help to those who need it most.[44]

We have looked at a brief picture of crisismapping and shown that there are tangible uses for information to help save people caught in disasters. We have not yet considered the expectation that people have when they post sensitive information in emergency situations. It is reasonable to expect that the information provided on an emergency call would be used for those emergency services. In contrast, most people have no expectation that their personal correspondences could or would be used to inform relief efforts. Further still, people do not know that their data is stored after relief efforts are over or that data can lie unprotected and unrestricted, perhaps in perpetuity. How should we handle these new concerns? This will be described in the next sections after we outline the privacy interests at stake and the human rights and international legal mechanisms that codify these interests.

While strides have been made to create working protocols about handling data responsibly during use by various collaborating agencies, these protocols are voluntary, ad hoc, and lacking in oversight.[45] Furthermore, after deployments, issues surrounding data storage and subsequent access fall under the same issues. Access is critical because once data is released, there is no way to track its usage or its users. Even something as innocuous as searching for a trending term or sending out messages of support will be sometimes utilized in these responses.

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[44] Julian Sanchez, "GOVERNMENT DISCRETION IN THE AGE OF BULK DATA COLLECTION: AN INADEQUATE LIMITATION?" *Harvard Journal of Law & Public Policy* 2, no. 1 (2014): 1, 2. (Accessed October 19, 2018.) doi:10.1057/9781137352521.0009.

[45] "Council of Europe Treaty Series Recommendation No. R(99) 5." Of the Committee of Ministers to Member States for the Protection of Privacy on the Internet. February 1999. (Accessed January 10, 2019.) https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016804f4429.

If you have sent out mainstream—non-China-based—social-media correspondences, those messages have likely been collected and analyzed as part of the crisismapping phenomenon.

Figure 3.2 Micromappers Monitoring GoogleDoc for Typhoon Ruby

Additional Components of Crisismapping

Using artificial intelligence, machine learning processes, satellites, drones, and more, crisismapping involves a complicated curation of many data sources to create situational awareness.[46] I will outline some of the mechanisms that were not covered in detail in the previous subsection to better frame the technological mechanisms behind privacy concerns.

Micromappers and AIDR

Crisismapping utilizes too many instances for any one person to analyze alone. The use of artificial intelligence and machine learning help to make crisismapping possible.[47] The challenge is sorting relevant information from the flood of posts. "Out of a million Tweets, there might be 100 with useful information for a specific purpose."[48] It would be impossible for individuals to categorize the massive volume of Tweets. "However, tools are available to

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[46] "Recommendations of the Review." GOV.UK. October 16, 2017. (Accessed September 15, 2018.)
https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk/recommendations-of-the-review.
[47] Patrick Meier, "Haiti and the Power of Crowdsourcing." April 07, 2010. (Accessed November 11, 2018.)
[48] Intelligence Unit. "Improving Disaster Response Efforts through Data." 2018. (Accessed March 18, 2019.)

automate this process, including enterprise and open-source software. One example of the latter is Artificial Intelligence for Digital Response [AIDR], a free open-source software platform that classifies social media messages related to disasters and humanitarian crises."[49] AIDR and the MicroMappers "Text Clicker" combine human and machine computing to automatically filter tweets and text messages after some initial crowdsourced sorting. The filtered tweets are then pushed to the Geo Clickers for geo-tagging purposes. The same (semi-automation) process for photos and videos is an active area of research and development in the field of computer vision.[50]

The range of people involved with the many facets of this work seems almost endless. We will here focus on the most salient actors in the adoption and use of these technologies. Patrick Meier serves as an architect for the curation of these technologies for disaster response. Meier's work helped lead the way to the cross-sector revolution in data sharing for social good. *Digital Humanitarians*, Meier's book about the process, outlines his role in the creation and adaptation of these technologies and processes.[51] Crowd appeals like Meier's have yielded consistently large responses, making this work possible.[52]

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[49] Ibid

[50] Patrick Meier, "MicroMappers: Towards Next Generation Humanitarian Technology." IRevolutions. February 09, 2015. (Accessed December 17, 2018.) https://irevolutions.org/2014/12/12/micromappers-humanitarian-technology/.
[51] Patrick Meier, "Digital Humanitarians, Big Data and Disaster Response." Brookings.edu. July 29, 2016. (Accessed September 04, 2018.)
https://www.brookings.edu/blog/techtank/2015/02/19/digital-humanitarians-big-data-and-disaster-response/.
[52] Kevin J. Lakhani, "Using the Crowd as an Innovation Partner." Harvard Business Review. March 18, 2019. (Accessed March 26, 2019.)
https://hbr.org/2013/04/using-the-crowd-as-an-innovation-partner?referral=03759&cm_vc=rr_item_page.bottom.

How much damage do you see in this picture:

1 None
2 Mild
3 Severe

@MicroMappers

Figure 3.3 MicroMappers Platform

Satellites

Satellite mapping has become increasingly popular to identify communities in crisis immediately following a disaster. Through the International Charter on Space and Major Disasters, overseen by the United Nations Space-based Information for Disaster Management and Emergency Response, a network of organizations volunteer time and access to their satellite feeds for a variety of aid purposes.[53] Planet, formerly Planet Labs was founded by ex-Nasa scientists and among other things has a satellite program that orbits the globe every 24 hours to map differences day-to-day.[54] Sharing these information clusters with partner institutions helps to further deepen situational awareness.

> US agencies used mapping and geolocation data to support recovery efforts during the calamitous August-September 2017 period when Hurricanes Harvey and Irma struck Houston, Texas and the Caribbean islands, respectively, and a 7.1-magnitude earthquake

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[53] "International Charter Space and Major Disasters." UNSPIDER. 2018. (Accessed November 11, 2018.) http://www.un-spider.org/space-application/emergency-mechanisms/international-charter-space-and-major-disasters .

[54] "Company." Planet. May 07, 2018. (Accessed December 17, 2018.) https://www.planet.com/company/.

hit Mexico City. The National Oceanic and Atmospheric Administration used insights from sensor data and satellite imagery to predict where the hurricanes were likely to land and coordinate with local first responders. Meanwhile, NASA produced maps of Mexico City and surrounding areas damaged by the earthquake to assist with response efforts.[55]

Multiple other collaborations utilizing satellites and their imaging capacities have arisen and are too numerous to recount here. This valuable technology provides information that could never be collected on the ground, but it too has come under scrutiny in recent years for its increased capacity to aid State surveillance at the expense of privacy. More detailed information entails more potential for abuse.

Metadata

Metadata provides information about the contents and context of the information that describes data or files. Simply put, it is data about the data. Metadata varies between different fields and different uses. Specifically, metadata is extremely useful in classification, helping in the cataloging of information. One salient type of metadata to emergency response concerns information about mobile phone usage.[56] Without having direct access to the information in the text messages or the phone calls themselves, agents can track people through metadata associated with their mobile presence. Information can be as specific as locating a particular person in a small geographic area at a particular time. Even partial access to such information can paint a very accurate picture of a person's whereabouts or doings. Such forms of decryption remain outside of a well-defined regulatory sphere.[57]

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[55] Intelligence Unit. "Improving Disaster Response Efforts through Data." 2018. (Accessed March 18, 2019.)

[56] Marshall Kuypers, and Thomas Mailart. "Designing Organizations for Cyber Security Resilience." ARTICLE. 2018. (Accessed November 29, 2018.) https://weis2018.econinfosec.org/wp-content/uploads/sites/5/2016/09/WEIS_2018_paper_50.pdf.

[57] Lab, Citizen. "Tracking GhostNet: Investigating a Cyber Espionage Network." Issuu. 2009. (Accessed September 01, 2018.) https://issuu.com/citizenlab/docs/iwm-ghostnet/35.

This subsection has provided a more concrete understanding of a few major pieces of technology used in crisismapping to clarify the potential for privacy intrusions. Section 4 will place these privacy concerns into conceptions and legal frameworks of human rights.

4. The Right to Privacy and Related Rights

Surveillance issues have long been a concern among humans.[58] From Bentham's panopticon to closed-circuit cameras in public to web-cookies where websites are able to trace the websites visited before and after going to the site, people have valid fears about others intruding upon their actions and lives.[59] Under threat of invasion of privacy other rights such as freedom of expression, association, and movement are also put into jeopardy.[60] The trust that humans have is important and miscarriages of justice that arise from violations of that trust are especially egregious, and have led to failures in due process and have led to wrongful arrests and more.[61]

Crisismapping is tantamount to digital espionage, but academics have yet to scrutinize the ethical stakes of this new technology and its potential uses for disaster response. Technology has the power to alleviate symptoms of poverty across international borders.[62] Yet, technology can easily lead to egalitarian failures of utilitarianism, where individual well-being is sacrificed

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[58] David Archard, "Privacy, the Public Interest and a Prurient Public: Going Public: What Is an Invasion of Privacy." *Media Ethics* 1, no.1 (March 23, 1998): 245-98. (Accessed October 03, 2018.) doi:10.1017/cbo9780511495342.008.
[59] David Barrett, "One Surveillance Camera for Every 11 People in Britain, Says CCTV Survey." The Telegraph. July 10, 2013. (Accessed October 04, 2018.) https://www.telegraph.co.uk/technology/10172298/One-surveillance-camera-for-every-11-people-in-Britain-says-CCTV-survey.html.
[60] Brent Mittelstadt, "From Individual to Group Privacy in Biomedical Big Data." *Big Data, Health Law, and Bioethics* 30, no. 4 (February 11, 2017): 175-92. (Accessed September 29, 2018.) doi:10.1017/9781108147972.017.
[61] Michael Pollitt, "The Economics of Trust." December 13, 2003. (Accessed August 28, 2018.); "Cybercrime Module 10 Key Issues: Privacy What It Is and Why It Is Important." Cybercrime Module 10 Key Issues: Privacy What It Is and Why It Is Important. 2018. (Accessed March 26, 2019.) https://www.unodc.org/e4j/en/cybercrime/module-10/key-issues/privacy-what-it-is-and-why-it-is-important.html.; "13th Session Human Rights Council United Nations General Assembly." Report of the Special Rapporteur on the Promotion and Protection of Human Rights and Fundamental Freedoms While Countering Terrorism, Martin Scheinin. December 2009. (Accessed November 11, 2018.) https://www2.ohchr.org/english/bodies/hrcouncil/docs/13session/a-hrc-13-37.pdf. para 33.
[62] Sarah Rothnie, "Humanitarian Projects Using Blockchain for a Better World." CoinCentral. July 08, 2018. (Accessed September 11, 2018.) https://coincentral.com/humanitarian-projects-blockchain/.

for the aggregate.[63] How can we balance maximizing and collectivizing rights protections with the potential for countless saved lives? To answer this question, we should first look at the interests behind the rights themselves, and then the codified rights as they stand in the international legal context.

Conceptions of privacy vary but include: the right to be left alone, the right to be free from observation, the right and ability to control who, what, why, where, when and how information about oneself is revealed and used.[64] The human right to privacy is tethered to the concept of freedom of identification. This anonymity enables people to act freely such that their actions and activities will not be revealed to others.[65] Online anonymity "provides individuals and groups with a zone of privacy online to hold opinions and exercise freedom of expression without arbitrary and unlawful interference or attacks."[66]

The human right to privacy is explicitly enshrined in international human rights treaties. These include Article 12 of the Universal Declaration on Human Rights (UDHR) of 1948, Article 17 of the International Covenant on Civil and Political Rights of 1966, Article 7 of the Charter of Fundamental Rights of the European Union of 2000, Article 8 of the European

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[63] Rocci Luppicini, "De-Marginalizing Technophilosophy and Ethical Inquiry for an Evolving Technological Society." *International Journal of Technoethics* 9, no. 2 (July 01, 2018): 1-14. (Accessed September 29, 2018.) doi:10.4018/ijt.2018070101.

[64] Bert-Jaap Koops, and Maša Galič. "Conceptualizing Space and Place: Lessons from Geography for the Debate on Privacy in Public." *Privacy in Public Space*: 19-46. (Accessed September 01, 2018.) doi:10.4337/9781786435408.00007.; "Cybercrime Module 10: Privacy. 2018. (Accessed March 26, 2019.)

[65] Alexandra Rengel, "Privacy as an International Human Right and the Right to Obscurity in Cyberspace." *Groningen Journal of International Law*2, no. 2 (2014): 33. (Accessed September 14, 2018.) doi:10.21827/5a86a81e79532.

[66] "Privacy Perspectives | "Building Ethics into Privacy Frameworks for Big Data and AI": A Report from UN Global Pulse and the IAPP Related Reading: EDPS: We Need to Move the Needle on Ethics." Inside the EPrivacy Regulation's Furious Lobbying War. 2017. (Accessed September 02, 2018.) https://iapp.org/news/a/building-ethics-into-privacy-frameworks-for-big-data-and-ai-a-report-from-un-global-pulse-and-the-iapp/.; David Kaye, "29th Session of the Human Rights Council: Reports." OHCHR Report of the Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, David Kaye. May 22, 2015. (Accessed January 03, 2019.) https://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session29/Pages/ListReports.aspx.

Convention on Human Rights of 1950, Article 11 of the American Convention on Human Rights of 1969, Article 22 of the Convention on the Rights of Persons with Disabilities of 2006, Article 16 of the Convention on the Rights of the Child of 1989, and Article 14 of the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families of 1990. These are among the most fundamental treaties to lay out the obligations of the State on behalf of her citizens.

Privacy enables the fulfilment of other human rights and thus is closely connected thereto. The right to privacy is also linked to the right to self-determination. Article 20(1) of the African Charter on Human and Peoples' Rights of 1981 states, "All peoples shall have the right to existence. They shall have the unquestionable and inalienable right to self-determination. They shall freely determine their political status and shall pursue their economic and social development according to the policy they have freely chosen."[67] Human dignity is also closely related to privacy. Dignity is a contested concept which refers in common formulations to a person's "sense of self-worth, … [that a person has] a duty to develop and respect in …[oneself] and a duty to protect in others."[68]

Privacy is a necessary condition for freedom of expression, thought, religion, assembly, and association (see A/HRC/39/29; A/HRC/23/40 and A/HRC/29/32, para. 15; A/HRC/31/66, paras. 73-78 and A/72/135, paras. 47-50, cited from DOHA).[69] An essential aspect of

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[67] "African Charter on Human and Peoples' Rights." ACHPR. 2005. (Accessed September 22, 2018.) http://www.achpr.org/instruments/achpr/.

[68] "Counter-Terrorism Module 3."United Nations Doha Declaration: Counter-Terrorism Module 3. 2018. (Accessed March 26, 2019.) https://www.unodc.org/e4j/en/terrorism/module-3/index.html.

[69] "Cybercrime Module 10 Key Issues: Privacy What It Is and Why It Is Important." Cybercrime Module 10 Key Issues: Privacy What It Is and Why It Is Important. 2018. (Accessed March 26, 2019.) https://www.unodc.org/e4j/en/cybercrime/module-10/key-issues/privacy-what-it-is-and-why-it-is-important.html.

self-determination is the ability to make choices and act in ways of her own choosing free from coercion, respecting her personal autonomy.

The ICCPR states, "No one shall be subject to arbitrary or unlawful interference with his [or her] privacy, family, home or correspondence, nor to unlawful attacks on his honour and reputation."[70] Further, "[e]veryone has the right to the protection of the law against such interference or attacks."[71] In an attempt to expand understanding and thus legal obligations surrounding the right to privacy, the United Nations General Assembly adopted resolution Resolution 68/167, Right to Privacy in the Digital Age.[72] Its preamble states, "[U]nlawful or arbitrary surveillance and/or interception of communications, as well as unlawful or arbitrary collection of personal data, as highly intrusive acts, violate the rights to privacy and freedom of expression and may contradict the tenets of a democratic society."[73] The resolution asserts that States must comply with and ensure to meet their existing conditions under international human rights law even "while concerns about public safety may justify the gathering and protection of certain sensitive information."[74]

Issues of identification arise daily online, from data breaches to a practice known as "doxxing," where internet users are researched and their identity is publicly outed online from

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[70] "UN, United Nations, UN Treaties, Treaties ICCPR." United Nations. (Accessed September 09, 2018.) https://treaties.un.org/Pages/Treaties.aspx?id=4&subid=A&lang=en.; "Universal Declaration of Human Rights." United Nations. (Accessed September 2018.) http://www.un.org/en/universal-declaration-human-rights/.

[71] "Counter-Terrorism Module 3.". 2018. (Accessed March 26, 2019.);"UN, United Nations, UN Treaties, Treaties ICCPR." United Nations. (Accessed September 09, 2018.) https://treaties.un.org/Pages/Treaties.aspx?id=4&subid=A&lang=en. Article 17(1) and 17(2)

[72] "Right to Privacy in the Digital Age." OHCHR. 2014. (Accessed December 17, 2018.) https://www.ohchr.org/en/issues/digitalage/pages/digitalageindex.aspx.

[73]"Right to Privacy in the Digital Age.". 2014. (Accessed December 17, 2018.); "Cybercrime Module 10 Key Issues: Privacy". 2018. Accessed March 26, 2019.; "Sixty-Eighth Session United Nations General Assembly." 68/167. The Right to Privacy in the Digital Age: A/RES/68/167 - E - A/RES/68/167. December 2013. (Accessed November 11, 2019.) https://undocs.org/A/RES/68/167.

[74] "Cybercrime Module 10 Key Issues: Privacy." 2018. (Accessed March 26, 2019.); "Sixty-Eighth Session United Nations General Assembly." 68/167. December 2013. (Accessed November 11, 2019.)

social media searches and other methods of internet search. This practice threatens the safety of users by bypassing their anonymity and has been particularly harmful to females online.[75] Guidelines exist to thwart such actions; "technical solutions to secure and protect the confidentiality of digital communications, including [anonymity] measures … can be important to ensure the enjoyment of human rights, in particular the rights to privacy, to freedom of expression and to freedom of peaceful assembly and association."[76] Taking this further, "States [should] not to interfere with the use of such technical solutions, with any restrictions thereon complying with States' obligations under international human rights law."[77]

These treaties establish that a right to privacy in the abstract, but they do not necessarily give us a direct answer to apply that right to crisismapping. Where Resolution 68/167 bans *arbitrary* surveillance or interception of communications, crisismapping is certainly not arbitrary in its best uses. Data is collected to make disaster response more effective, an important interest that must be balanced against the interests of privacy. To address this balancing, we must look closer to see how the right to privacy is balanced against other rights and entitlements in the context of digital technologies.

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[75] Jasmine McNealy, "What Is Doxxing, and Why Is It so Scary?" The Conversation. December 19, 2018. (Accessed February 03, 2019.) http://theconversation.com/what-is-doxxing-and-why-is-it-so-scary-95848.

[76] "Thirty-Eighth Session United Nations General Assembly." Resolution A/HRC/RES/38/7 - E - A/HRC/RES/38/7 The Promotion, Protection and Enjoyment of Human Rights on the Internet. July 05, 2018. (Accessed December 17, 2018.) https://undocs.org/A/HRC/RES/38/7.; "Sixty-Eighth Session United Nations General Assembly." 68/167. December 2013. (Accessed November 11, 2019.)

[77] "72nd Session General Assembly of the United Nations." 72/175. The Safety of Journalists and the Issue of Impunity A/RES/72/175 - E - A/RES/72/175. January 2018. (Accessed January 03, 2019.) https://undocs.org/A/RES/72/175.; "Counter-Terrorism Module 3." 2018. (Accessed March 26, 2019.) https://www.unodc.org/e4j/en/terrorism/module-3/index.html.; "39th Session Human Rights Council: General Assembly of the United Nations." 39/6. The Safety of Journalists A/HRC/RES/39/6 - E - /A/HRC/RES/39/6. October 2018. (Accessed January 03, 2019.) https://undocs.org/A/HRC/RES/39/6.

5. Weighing Privacy Interests under European Law

In a modern world, where people spend an average of 3.5 hours per day on their phones, digital privacy concerns are more pressing than ever, but the rapid increase in technology leaves international treaties struggling to keep pace with the changes.[78] In this context, Article 8 of the European Convention on Human Rights (ECHR) is the most salient mechanism to situate our discussion as a modern statement of the right to privacy. While European precedent will not bind all international contexts, it can provide us guidance as to approaching the weighing of interests at stake.

Basic Conventions

Article 8 of the European Convention on Human Rights states:[79]

Right to respect for private and family life
1. Everyone has the right to respect for his private and family life, his home, and his correspondence.
2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety of the economic well-being.

Article 8 mirrors UN treaty language and explicitly lays out the different protections of citizen privacy.[80] Protocols exist to define how to handle data and processes surrounding government officials during regular times and also during times of threats to national security.[81] The interests

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[78] Helen Nissenbaum, "Privacy as Contextual Integrity." *Washington Law Review* 79, no. 119 (2004). (Accessed September 29, 2018.) https://crypto.stanford.edu/portia/papers/RevnissenbaumDTP31.pdf.
[79] "European Convention on Human Rights." Council of Europe. (Accessed September 9, 2018.) https://www.echr.coe.int/Documents/Convention_ENG.pdf.
[80] "14th Sitting of the Parliamentary Assembly of the Council of Europe." PACE - Resolution 1986 (2014) - Improving User Protection and Security in Cyberspace. 2014. (Accessed November 11, 2018.) https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=20791&lang=en.
[81] "Council of Europe Treaty Series No. 223." Protocol Amending the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data. 2018. (Accessed January 03, 2019.) https://rm.coe.int/16808ac918.

behind these protections have been expanded through amendments and protocols developed specifically to handle digital privacy. One such measure is Resolution 1843,[82]

> Although precautionary technologies and software, voluntary self-regulation by ICT companies and private users, as well as improved user awareness, may reduce the risk of interference with privacy and the harmful processing of personal data through ICTs, the Assembly believes that only specific legislation and effective enforcement can sufficiently protect the right to protection of privacy and personal data as required by Article 17 of the ICCPR and Article 8 of the European Convention on Human Rights.

This provision emphasizes that only specific legislation can address the key concerns of privacy and their related interests.

A particularly important convention is the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (CETS 108, hereafter "Convention 108"). Convention 108 emphasises that the right to the protection of personal data includes that "everyone has the right to know, access and rectify their personal data processed by third parties or to erase personal data which have been processed without the right to do so."[83] This convention emphasizes that individuals have a right to control their data, and the right to know when third parties are accessing and using that data. Convention 108 sets up a general interest that each individual holds in controlling her data unless she or an independent authority gives consent for it to be used by a third party.

Privacy as a Derogable Right

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[82]"36th Sitting of the Parliamentary Assembly of the Council of Europe." PACE - Resolution 1843 (2011) - The Protection of Privacy and Personal Data on the Internet and Online Media. October 07, 2011. (Accessed November 10, 2018.) http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=18039&lang=en.
[83] Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data, CETS No. 108 (Strasbourg, 28 Jan 1981), http://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/108.;"36th Sitting of the Parliamentary Assembly of the Council of Europe." PACE - Resolution 1843 (2011) . October 07, 2011. (Accessed November 10, 2018.)

The right to privacy is not among the select group of rights that are nonderogable in times of emergency or crisis.[84] ICCPR Article 17 states, "Derogations can be made only during a state of emergency threatening the life of the nation."[85] The key question is a matter of degree: how much can State and aid organizations infringe on privacy in times of emergency?

Convention 108 gives specific interests to weigh when considering violations of privacy by digital technology. Convention 108 bases the protection of personal autonomy in a person's right to control his or her personal data.[86] "Control requires awareness of the use of personal data and real freedom of choice."[87] The question then is what constitutes "real freedom of choice" in this context. United Nations General Assembly report 69/397, paragraph 28 can help shed light,

> [T]he presumption that individuals should have an area of personal autonomous development, interaction and liberty free from State intervention and excessive unsolicited intrusion by other uninvited individuals. … The duty to respect the privacy and security of communications implies that individuals have the right to share information and ideas with one another without interference by the State (or a private actor), secure in the knowledge that their communications will reach and be read by the intended recipients alone. The right to privacy also encompasses the right of individuals to know who holds information about them and how that information is used.[88]

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[84] "Counter-Terrorism Module 3."United Nations Doha Declaration. 2018. (Accessed March 26, 2019.)

[85] "Council of Europe Treaty Series No. 223." Protocol Amending the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data. 2018. (Accessed January 03, 2019.) https://rm.coe.int/16808ac918.

[86] "Consultative Committee of the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data." Guidelines on the Protection of Individuals with Regard to the Processing of Personal Data in a World of Big Data. January 2017. (Accessed March 26, 2019.) https://rm.coe.int/t-pd-2017-1-bigdataguidelines-en/16806f06d0.

[87] "Consultative Committee of the Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data." January 2017. (Accessed March 26, 2019.)

[88] "Cybercrime Module 10 Key Issues: Privacy" 2018. (Accessed March 26, 2019.);"Sixty-Ninth Session United Nations General Assembly." Resolution A/HRC/RES/69/397 - E - A/HRC/RES/69/397 Promotion and Protection of Human Rights and Fundamental Freedoms While Countering Terrorism. July 05, 2014.)Accessed December 17, 2018.) https://documents-dds-ny.un.org/doc/UNDOC/GEN/N14/545/19/PDF/N1454519.pdf?OpenElement. para 28.

Thus, the right to control must be interpreted with an eye to giving individuals the ability to communicate and share information and an assurance that individuals should know who uses that information and how it is used. We can see that crisismapping could easily overstep these guidelines, using an individual's communications and information without her knowledge or consent.

By the very nature of crisismapping, information is culled in a manner that is unsolicited; people have no knowledge that it is happening and thus are unable to give their consent. Crisismapping utilizes information in a variety of forms that go far beyond reaching an individual's "intended recipient alone." Individuals have no way to know that their information has been used and no way to know who has access to it presently. Crisismapping is problematic then because it challenges the individual's right to control her own data and saps her of any assurance that her communications will be used only for the purpose intended.

Protecting Data from Misuse

The European Court of Human Rights has been a leader in shaping the trajectory of privacy rulings.[89] In addition to case law they have developed guides for upholding the right to privacy for member states and within international legal frameworks.

Due to the similar nature of the ethical considerations, much inspiration and research comes from the field of counterterrorism. This caselaw confirms that Article 8 applies to data and information even if it is already in the public domain.[90]

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[89] So to has been the European Union in general.

[90] *Satakunnan Markkinapörssi Oy and Satamedia Oy v. Finland* [2017]application no. 931/13 (European Court of Human Rights). Section 134. (Accessed October 08, 2018.); "Guide on Article 8 of the European Convention on Human Rights Right to Respect for Private and Family Life." Directorate of the Jurisconsult of the European Court of Human Rights. 2017. P36 (Accessed October 08, 2018.) https://www.echr.coe.int/Documents/Guide_Art_8_ENG.pdf.

Speaking with regard to the criminal justice system and the use of modern scientific techniques, the Court has established that privacy rights are interpreted by balancing key interests. "[T]he protection afforded by Article 8 of the Convention would be unacceptably weakened if such techniques were allowed at any costs and without carefully balancing the potential benefits of the extensive use of such techniques against important private-life interests." [91] In particular, the Court has found that domestic laws of member States must ensure that personal data is appropriately safeguarded from misuse and abuse.[92] Even weighing against the very high degree of importance of national security against terror threats, the Court asserts that, "The law must provide an effective and accessible procedure enabling applicants to have access to any important information concerning them."[93] The Court then establishes a balancing test among these interests, but even in the face of critical interests in national security, it affirms the importance of control of personal data.

Consent

The Court has held that data must be secured unless an individual or an independent authority decides to grant access.[94] The General Data Protection Regulation (GDPR) similarly states that people must freely give their consent for their data to be processed.[95] In fact, the

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[91] *CASE OF S. AND MARPER v. THE UNITED KINGDOM* [2008]Applications nos. 30562/04 and 30566/04 (European Court of Human Rights). Section 112. (Accessed October 08, 2018.)

[92] *AFFAIRE GARDEL v. FRANCE* [2009]Application no. 16428/05 (European Court of Human Rights). Section 62; "Guide on Article 8 of the European Convention on Human Rights." Directorate of the Jurisconsult of the European Court of Human Rights. 2017. P35 (Accessed October 08, 2018.)

[93] Ibid P37, In this particular case, the applicant, a police officer had been declared unfit for the position in question. He complained that he had been refused access to his personnel file at the Ministry of the Interior, and in particular the assessments, on grounds that certain documents were classified.; *Yanchev v. Bulgaria* [2012]no. 16403/07 (European Court of Human Rights). Sections 49-53.

[94] *CASE OF GASKIN v. THE UNITED KINGDOM* [1989]Application no. 10454/83 (European Court of Human Rights). Section 49; "Guide on Article 8 of the European Convention on Human Rights." P37 2017. (Accessed October 08, 2018.)

[95] "Consent." General Data Protection Regulation (GDPR). 2018. (Accessed January 03, 2019.) https://gdpr-info.eu/issues/consent/.

GDPR calls for the appointment of Data Protection Officers for companies for whom the processing of data is central to achieving their goals.[96] Crisismapping is the processing of data, yet the process is undertaken in such small parts by so many actors that strict oversight by the lead coordinating agencies to ensure this compliance would seem necessary. However, there exists no mechanism for consent, and thus, this feature of proportionality is bypassed completely.

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[96] "Data Protection Officer." General Data Protection Regulation (GDPR). 2018. (Accessed January 03, 2019.) https://gdpr-info.eu/issues/data-protection-officer/.

6. Weighing Competing Interests

The framework defined in the previous subsections establishes a framework based on weighing key interests and evaluating their proportionality in times of emergency. This subsection will identify two key competing interests—timely triage and privacy costs—that are present when crisismapping is applied to disaster response. It will then discuss the standard of proportionality that ought to be used to weigh these interests under European law.

Timely Triage

Against the importance of protecting an individual's right to control over her data and communications stands the interests that individuals have in timely triage during a disaster. In their 2005 World Disasters Report, then Secretary General Markku Niskala of the International Federation of Red Cross and Red Crescent Societies stated, "First, aid organizations must recognize that accurate, timely information is a form of disaster response in its own right. It may also be the only form of disaster preparedness that the most vulnerable can afford."[97] Niskala emphasizes not only that timely response is a right, but also that it is a right targeted to the most vulnerable.

The report further questions the role of data in disasters. "Information technology has helped aid agencies gather and store information, but do people affected by disasters get enough information? Do they get warnings of disaster? Are they told what aid agencies are planning on their behalf? Are they involved in making decisions? Do they know their entitlements from government? Are organizations as good at sharing information with affected people as with donors? The answers to these questions reveal much about the underlying power relationships

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[97] *International Federation of the Red Cross and Red Crescent Societies 2005 World Disaster Report*. Report. IFRC. Geneva, Switzerland: IFRC, 2005. 1-258. Pg.9. (Accessed December 17, 2018.)

between aid givers and receivers."[98] Each of these questions emphasize the importance of providing not only aid but also information to people affected by aid agencies.
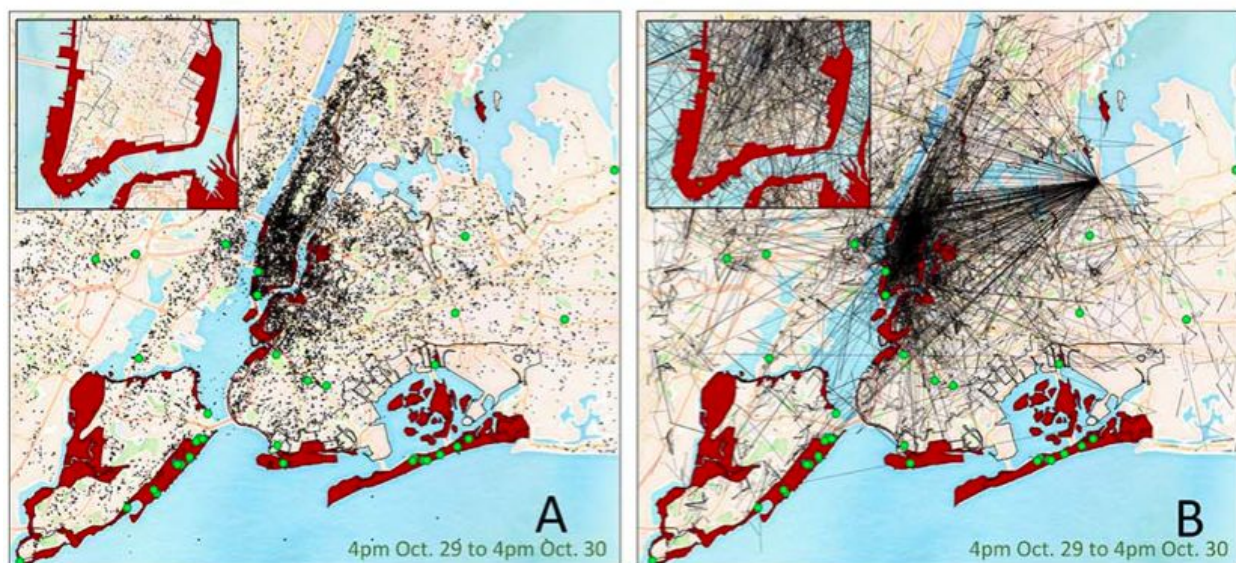
Figure 6.1 Cell phone user migration over 24 hours from social media activity tracking in Hurricane Sandy

Privacy Costs

Concern for these instances arise in less democratic regimes around the world, where access to information in the hands of the people is and has been criminalized. In the comments section of a World Bank post about crisismapping, concern was raised about people fleeing harassment and forced detentions caused by targeting enabled by a crisismapping deployment called Somalia Speaks.[99] Another user alleged that adding locations to messages—via the actual mapping of the instances—constituted unethical behavior that violates companies' privacy

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[98] *2005 World Disaster Report*. Report. IFRC., 2005. 1-258. pg. 12

[99] Jing Guo, "How User-Generated Crisis Maps Save Lives in Disasters." People, Spaces, Deliberation. August 27, 2014. (Accessed December 17, 2018.)
https://blogs.worldbank.org/publicsphere/how-user-generated-crisis-maps-save-lives-disasters.

policies by posting messages to a public map.[100] These allegations point to real, tangible costs that individuals can suffer when data is misused.

Individuals also lose control over their data within crisismapping, a key concern cited by the European Court of Human Rights above. When a social media user decides to remove, delete, or edit their posts, she can do so only on her own pages. Information that has been taken and used in aggregate or disaggregate is merely a snapshot, and the ability of users to alter or remove this is taken away. This limited autonomy is not common knowledge, as most people are unfamiliar with the processes used to collect and share their data. Nonetheless, the snapshots of information undermine a key aspect of personal control.

Proportionality

The question then stands how European law would weigh interests in timely triage against the privacy costs inherent in crisismapping. Under European law, specific guidelines exist around the protection of human rights in emergency situations. We can look to the European Convention on Human Rights and a report from the Council of Europe in 2009, also enshrined in other legislation, which state that declarations of emergency are permitted only "in time of war of other public emergency threatening the life of the nation."[101] They should be carried out in great care and with the State's legislature as having a central role in overseeing it. Further outlining that emergency powers should "always be limited in time, featuring a "sunset clause."[102]

Proportionality claims are considered under three conditions.[103]

(1) Ordinary law must be shown to be insufficient to deal with the emergency.

[100] Jing Guo, "How User-Generated Crisis Maps Save Lives." August 27, 2014. (Accessed December 17, 2018.)
[101] "The Protection of Human Rights in Emergency Situations." ReliefWeb - Report - Armenia. 2009. Accessed November 11, 2018. https://reliefweb.int/report/armenia/protection-human-rights-emergency-situations-report.
[102] "The Protection of Human Rights in Emergency Situations." 2009. (Accessed November 11, 2018.)
[103] Ibid

(2) The measure should be specifically intended to end the emergency.

(3) Relatively severe measures are acceptable as long as adequate safeguards exist.

If we value the contribution that crisismapping provides to triage mechanisms that are unable to be found elsewhere, then its use clearly fulfils one and two. The question then focuses on condition 3. Even if we consider crisismapping's effects to be relatively severe restrictions on privacy, they could be justified. However, there are not adequate safeguards on these restrictions, or any safeguards at all.

To consider what these safeguards would look like, we can consider a related measure. As part of the European Commission's effort for stronger crisis management and response capacity, The Data Retention Directive was introduced and adopted in 2005. It required EU telecommunications operators to retain selected data for six months to two years for potential concerns to national safety.[104] Touting the benefits of data retention practices, including the ability to potentially prosecute or exonerate suspected criminals, it even survived a critical inquiry by the European Commission in 2011 until it was struck down as "invalid" by the Court of Justice of the European Union (CJEU) in 2014.[105]

The CJEU ruled that the directive did not meet the principle of proportionality. The Court further said the Directive should have "provided more safeguards to protect the fundamental rights to respect for private life and to the protection of personal data."[106] "The Court takes the view that, by requiring the retention of those data and by allowing the competent national

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[104] "European Commission: Data Retention." Migration and Home Affairs. 2018. (Accessed January 03, 2019.) https://ec.europa.eu/home-affairs/what-we-do/policies/police-cooperation/information-exchange/data-retention_en.

[105] "European Commission: Evaluation Report on the Data Retention Directive (Directive 2006/24/EC)." REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT. 2011. (Accessed January 03, 2019.) https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0225:FIN:en:PDF.

[106] "European Commission: Data Retention." 2018. (Accessed January 03, 2019.)

authorities to access those data, the directive interferes in a particularly serious manner with the fundamental rights to respect for private life and to the protection of personal data."[107]

The crux of this argument rests on the concept of proportionality, used in tandem with the "margin of appreciation" which enables the court to balance the sovereignty of member states.[108] Envisioned as a "lowest common denominator" in an effort to identify a uniform standard that the Court could enforce on States, while still respecting that States themselves are tasked with carrying out the tripartite mandate of human rights: respect, protect, and fulfill.

We would have a difficult time stating that a State utilizing these crisismapping methods during a natural disaster, violating the right to privacy and the tenets of liberty and trust behind that right, would not have a valid claim. Clearly, the State can claim that by the very nature of the emergency, national security and public safety have been jeopardized and that attempting to get the most accurate situational awareness equips the State to prevent disorder or crime and to protect the health, rights, and freedom of others.[109] In a situation where knowledge is power, this maxim feels almost tautological.

Instead, we could best balance the interests in privacy, along with the interests in effective triage two main ways. Firstly, we should understanding that the "at all costs" mentality is fallacy. Arguing that citizens need to withstand whatever privacy costs may come to provide

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[107] "Official Journal of the European Union." Judgment of the Court (Grand Chamber) of 8 April 2014 (requests for a Preliminary Ruling from the High Court of Ireland (Ireland) and the Verfassungsgerichtshof (Austria)) — Digital Rights Ireland Ltd (C-293/12) v Minister for Communications, Marine and Natural Resources, Minister for Justice, Equality and Law Reform, The Commissioner of the Garda Síochána, Ireland and the Attorney General, and Kärntner Landesregierung, Michael Seitlinger, Christof Tschohl and Others (C-594/12). 2014. (Accessed December 17, 2018.) https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=uriserv:OJ.C_.2014.175.01.0006.01.ENG.

[108] "Margin of Appreciation." Council of Europe Judicial Professions. 2017. (Accessed November 11, 2018.) https://www.coe.int/t/dghl/cooperation/lisbonnetwork/themis/echr/paper2_en.asp.

[109] "Report on the Twenty-first Session: Commission on Science and Technology for Development." United Nations Conference on Trade and Development. May 14, 2018. (Accessed November 05, 2018.) https://unctad.org/meetings/en/SessionalDocuments/ecn162018d4_en.pdf.

the most robust response possible is a mistake. Aid in times of disaster has changed much over the past few decades, gaining much needed nuance. One need only to look at the case of Plumpy'Nut, where a change in the quality of food donations from excess food stuffs to a specifically designed therapeutic food revolutionized the delivery of aid to malnourished people, especially children. It provided more nutritional stability including caloric intake and long-term weight gain in a safer, more nutrient soluble form.[110] The move to more cash-based aid disbursements as well is particularly beneficial to its recipients.[111] Aid refinements happen all of the time, and act as proof that victims of disasters do not need to willingly accept whatever aid is offered to them at whatever costs. The same can be said for the use of data. Using data to save lives does not mean that there should be unlimited access to and use of the data. New, effective methods will adapt to whatever restrictions are put in place.

Second, a key component in the determination of adequate safeguards must be the involvement and perspective of the people who are affected by the policy. Key in the European Court of Human Rights rulings was the control given to the individual to determine how her data is used. Similarly, Secretary General Niskala specifically mentioned the need to involve the affected parties in the determination of rights. Adequate measures should not merely be rules that aid agencies impose on themselves; they should include affected parties in the decision process.

The examination of European law has helped to identify several of the key interests at stake when weighing privacy interests against key interests related to human safety. We have seen that crisismapping would be questioned under European law for failing to provide adequate

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[110] Jim Motavalli, "Let Them Eat Plumpy'Nut." Foreign Policy. October 09, 2009. (Accessed March 26, 2019.) https://foreignpolicy.com/2009/10/08/let-them-eat-plumpynut/#.

[111] *An Introduction to Cash-Based Interventions in UNHCR Operations.* Report. UNHCR, United Nations. March 2012. (Accessed December 2018.) https://cms.emergency.unhcr.org/documents/11982/42039/An Introduction to Cash-Based Interventions in UNHCR Operations/1557f088-3ed9-4899-b11c-93d2c7e7a60a.

safeguards to protect important privacy interests. Two key takeaways should be taken from this analysis. First, it is a mistake to see safety as always outweighing any concerns about privacy. Second, a critical part of privacy is the involvement and control of the parties affected by those privacy concerns.
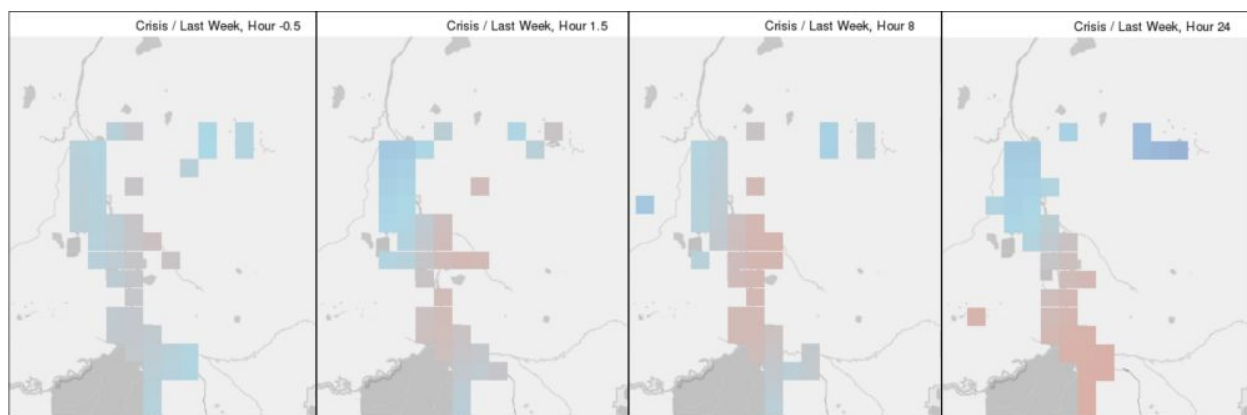
Figure 7.1 Facebook Location-based Safety-Check Fort McMurray Wildfire Crisismap

7. The Main Players

Stepping outside of the European context to the international realm, it is important to have an idea of who the main actors are at the different levels before we analyze privacy at the international level and its relation to crisismapping. This section lays out the actors at different levels involved in the telecommunications, State, UN, and aid spheres.[112]

International Organizations

The United Nations serves as the international organization that creates both soft law mechanisms and legally binding treaties among States. I include here the main humanitarian response agencies, such as the UN Office for the Coordination of Humanitarian Affairs and the World Food Programme. One such agency is the UN Global Pulse, which describes itself as "a flagship innovation initiative of the United Nations Secretary-General on big data."[113] Working under its own mission, it hosts working groups and has worked over the past several years to collaboratively fill the void and knowledge gap that computing advances left in the aid protocols

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[112] Vivek Wadhwa, "Laws and Ethics Can't Keep Pace with Technology." MIT Technology Review. September 19, 2014. (Accessed October 14, 2018.)

[113] "United Nations Global Pulse." United Nations Global Pulse. 2018. (Accessed February 13, 2019.) https://www.unglobalpulse.org/about-new.

and processes sphere. Due to their relative importance in the international realm, these agencies'

focus and work has both soft and hard influence over States.

States

The State is the ultimate human rights duty bearer and is tasked with upholding the rights

of its citizens. The State is culpable for the actions of businesses operating within it and ensuring

that those businesses are not violating human rights or thwarting laws and regulations.

Telecommunications and Social Media Platforms

The next tier can be classified as telecommunications and social-media organizations.

These are mobile-phone carriers and social-media platforms, such as Verizon, Sprint, Orange,

Facebook, and Twitter. These companies operate under domestic and international legislation,

meaning legislation gets murkier when information is transmitted across State boundaries. In

particular, where one State has a certain set of regulations that it feels are necessary to uphold

human rights obligations, another State may have a conflicting view, either for cultural,

religious, or even State-centric reasons.[114] The companies themselves must act within the legal

framework of the States where they are based and operating. If Facebook's headquarters are in

the United States, then it must abide by the laws and regulations of the U.S., but if it also

operates in India, then it must meet India's laws as well.

Facebook has worked for years on setting up collaborations with UNICEF, the

International Federation of the Red Cross, the American Red Cross, and the World Food

Programme to share the "actionable, real-time data that will fill critical gaps that exist in the first

hours of a sudden onset disaster."[115] Facebook's Research Review Process includes ways to work

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[114] OECD, Recommendation of the Council concerning Guidelines governing the Protection of Privacy and Transborder Flows of Personal Data, C(80)58/FINAL, as amended on 11 July 2012 by C(2013)79,: (Accessed October 29, 2018.)
http://www.oecd.org/sti/ieconomy/oecdguidelinesontheprotectionofprivacyandtransborderflowsofpersonaldata.htm.
[115] Patrick Meier, "The Future of Crisis Mapping." IRevolutions. June 09, 2017. (Accessed December 17, 2018.)

in ethical research processes, and those involved have claimed that Facebook has worked with their legal team in order to uphold global legal protection standards.[116] While inside actors have said that Facebook has worked to voluntarily adopt data-privacy and protection measures, recent scandals such as Cambridge Analytica show that even well-intentioned privacy measures without regulation can be inherently inadequate.[117]

Facebook's disaster-mapping initiative uses the information of its over 2.5 billion users to use location services to find out where people are.[118] At the same time, Facebook sells the data to advertisers.[119] Just to show how uneasy this information might make us, Facebook changed some of its advertising strategies after the Cambridge Analytica scandal, and the hardest hit advertisers to the policy change were car companies, who lost access to user data tracking everyday Facebook users.[120] The dealers and other companies who lost access can still get the data, they just have to go through another set of organizations, such as Oracle, to get it, meaning even more people have access to your data, which is of course all wholly untraceable by the user.

Aid and Relief Organizations

Next are aid organizations themselves. Often, they can be part of the United Nations, which has many different branches dedication to emergency aid, preparedness, and resilience in

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[116] "Research Review at Facebook." Facebook Research. January 14, 2017. (Accessed January 03, 2019.) https://research.fb.com/research-review-at-facebook/.

[117] Patrick Meier "The Future of Crisis Mapping." IRevolutions. June 09, 2017. (Accessed December 17, 2018.); Patrick Meier, "Professional Profile." LinkedIn. 2018. (Accessed March 11, 2019.) https://www.linkedin.com/in/meierpatrick/.

[118] "Mark Zuckerberg." Mark Zuckerberg - We Just Announced a New Partnership With... 2017. Accessed March 01, 2019. https://www.facebook.com/zuck/videos/10103779676719351/.; "Facebook Users Worldwide 2018." Statista. 2018. (Accessed March 14, 2019.) https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/.

[119] Natasha Singer, "What You Don't Know About How Facebook Uses Your Data." The New York Times. April 11, 2018. (Accessed September 05, 2018.) https://www.nytimes.com/2018/04/11/technology/facebook-privacy-hearings.html.

[120] Katie Notopoulos, "Facebook Showed Me My Data Is Everywhere." BuzzFeed News. April 16, 2019. (Accessed April 16, 2019.)

meeting the needs of humans in times of calm and emergency. Examples of this include, but are not limited to, the United Nations Office for the Coordination of Humanitarian Affairs and the World Food Programme, mentioned above as international organizations. Agencies outside the UN include the Red Cross societies, such as the American Red Cross and the International Federation of Red Cross and Red Crescent Societies; Mediciens Sans Frontieres (MSF); otherwise known as Doctors Without Borders; OXFAM; and USAID. These groups can be arms of or work closely with their respective governments or can be non-governmental organizations (NGOs). These organizations act as the liaison between the victims of disasters, the State(s) in which the disasters occured, donors, and UN bodies.

Ancillary Organizations

Ancillary companies and organizations process the information that people use and transmit—knowing or unknowingly—while utilizing technologies. Data brokers and data analysts from large tech companies, such as Oracle, IBM, Apple, and Google, to smaller organizations. Many organizations serve purely as data brokers, buying and selling metadata and raw data garnered legally or illegally through apps that embed tracking software and then sell the data. These companies can be affiliated with the government or not, have good or bad aims, and are technically bound to the same laws and regulations in the States where they operate. However, they tend to operate in gray areas of legislation, where their technology-company partners and their victims are kept in the dark.

It is almost impossible to track these agencies operations and thus impossible to trace who has access to your digital data, when they do, and where it goes.[121] This poses a strong

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[121] Julian Sanchez "GOVERNMENT DISCRETION IN THE AGE OF BULK DATA" *Harvard Journal of Law & Public Policy* 2, no. 1 (2014): 1-17. (Accessed October 19, 2018.) doi:10.1057/9781137352521.0009.

challenge to the principle of control emphasized above in European law. One example was seen recently when the American Civil Liberties Union (A.C.L.U.) detailed Immigrations and Customs Enforcement (ICE) officials partnering with a private data firm to track license plate data. According to the report, customs enforcement officials gained access to "over 5 billion data points of location information collected by private businesses, like insurance companies and parking lots, and can gain access to an additional 1.5 billion records collected by law enforcement."[122] The A.C.L.U. report is proof that our definition of what constitutes an invasion of privacy is expanding every day, and we must reckon with private surveillance databases armed with dossiers on regular citizens and outsourced to the highest bidder.

The "Crowd"

Crowdsourced workers are mostly volunteers who are trained professionals from other fields of work, who come together on "deployments" from the activating agencies. For instance, UNOCHA, a United Nations body, can activate the Digital Humanitarian Network, a consortium of specialized agencies and nonprofits, each tasked with a different component of a crisismapping activation, where each of the agencies puts a call out to volunteers from around the world to help collect, process, analyze, or disseminate the varying pieces and layers of information.[123] These actors can be experts in their fields or stay-at-home parents who happen to have extra time on their hands that they are looking to contribute to a bigger cause. These actors vary widely, and they are numerous. Tens of thousands of volunteers can come together for any one activation, and they can have access to an unknown range of information. There is no real

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[122] Natasha Singer, and Jennifer Valentine-DeVries. "Your Apps Know Where You Were Last Night." The New York Times. December 10, 2018. (Accessed December 11, 2018.)

[123] "Crowdsourcing Earthquake Detection: Smartphones to the Rescue." Science Node. 2015. (Accessed September 21, 2018.) https://sciencenode.org/spotlight/crowdsourcing-earthquake-detection-smartphones-rescue.php

oversight to limit how these actors can access information, to what extent, for how long, or even methods to track if they have curated or kept any information for themselves.[124] The responding agencies and States understand that a wide berth has been cast in terms of the volunteers responding.

Citizens and Data

Civilians of the world utilize technology to connect themselves for work, social life, and to carry out matters of everyday business. It would be easy to conflate the two main uses of technology discussed in this paper discusses, and I will attempt to clarify them here. The total data and information include both data which a person willingly transmits and data that they do not willingly transmit or even know about.[125] The former can take the form of a call from a person X to their mother, a social media post on a platform, or visiting a website, etc. The latter can be the metadata attached to their hardware usage or their "contacts" on the platforms they use. Without access to the message itself, information can be collected and then sold and analyzed by the ancillary companies mentioned above or by members of a crisismapping crowd on a deployment without our knowledge or agreement as citizens. "Location information can reveal some of the most intimate details of a person's life — whether you've visited a psychiatrist, whether you went to an A.A. meeting, who you might date," said Senator Ron Wyden, Democrat of Oregon, who has proposed bills to limit the collection and sale of such data, which are largely unregulated in the United States."[126]

Current Guides and Protocols

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[124] "Crowdsourcing Isn't as Unbiased as You Might Think." Harvard Business Review. October 24, 2017. (Accessed October 10, 2018.) https://hbr.org/2017/11/rethinking-crowdsourcing.
[125] Natasha Singer, and Prashant S. Rao. "U.K. vs. U.S.: How Much of Your Personal Data Can You Get?" The New York Times. May 20, 2018. (Accessed September 11, 2018.) https://www.nytimes.com/interactive/2018/05/20/technology/what-data-companies-have-on-you.html.
[126] Singer, Natasha, and Jennifer Valentine-DeVries. "Your Apps Know Where You Were Last Night." The New York Times. December 10, 2018. (Accessed December 11, 2018.)

This subsection ties together the work done by the most powerful agencies and bodies in terms of their own advancements in privacy issues to give a state of the field. The results show what is called a "loud silence." While much attention is given to novel uses of technology and their promulgations and some work is even done on salient privacy issues, nary do these two subjects meet. Instead, the caveat that privacy is upheld unless it is an emergency or a matter of national interest stops the conversation from proceeding further.

Two main themes follow from an in-depth look at privacy in the international sphere. First, the right to privacy is debated in multiple domains, including the UN mandating a Special Rapporteur on Privacy, mostly focused on cybercrime and counterterrorism efforts. Second, there is a massive push to figure out the "ethics" and legal mechanisms fast.[127] Still, with so much chatter going on about the right to privacy and balancing interests, few if any of these domains strongly addressed the potential violation of rights during times of emergencies or disasters.[128] Surprisingly, the area most in need of research is blanketed under broad generalized powers that are nowhere specified to this context. Even the European Union's General Data Protection Regulation—the most groundbreaking technology privacy legislation of the past two decades—buries the interest, stating that privacy rights will not be violated where it is in the state interest or in times of emergency, an exception that is again both vague and needing further

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[127] Privacy Perspectives | "Building Ethics into Privacy Frameworks for Big Data and AI": A Report from UN Global Pulse and the IAPP Related Reading: EDPS: We Need to Move the Needle on Ethics." Inside the EPrivacy Regulation's Furious Lobbying War. 2017. (Accessed September 02, 2018.) https://iapp.org/news/a/building-ethics-into-privacy-frameworks-for-big-data-and-ai-a-report-from-un-global-pulse-and-the-iapp/.

[128] Michael Bamberger "Integrating BIG DATA INTO THE MONITORING AND EVALUATION OF DEVELOPMENT PROGRAMMES." United Nations Global Pulse. 2016. 40. (Accessed November 11, 2018.) http://unglobalpulse.org/sites/default/files/IntegratingBigData_intoMEDP_web_UNGP.pdf.; Pell,. "Jonesing for a Privacy Mandate." 2 (May 10 2013): 489. (Accessed September 10, 2018.); O. Diggelmann, and M. N. Cleis. "How the Right to Privacy Became a Human Right." *Human Rights Law Review* 14, no. 3 (2014): 441, 450. (Accessed September 03, 2018.) doi:10.1093/hrlr/ngu014).

development.[129] Personal autonomy is emphasized, that concept is challenging where a modern person's digital footprint is being used in a plethora of ways that go unknown to most people.[130] If such collection takes place during times of calm, how can we legitimize workflows to reflect ethical privacy constraints during emergencies?[131]

Nearly all UN agencies, who are working fast to create tools to manage data, have recently issued reports and commissions on privacy issues, while still working out the ethics behind data use.[132] For example, the World Food Programme, whose aid helps 9.14 million people annually, has developed guidelines to deal with personal data collection.[133] The World Food Programme report mirrors others, as they outline a "minimum exceptional" set of standards for data collection and use, omitting any mention of privacy during emergencies.[134]

[129] Adam Satariano, "What the G.D.P.R., Europe's Tough New Data Law, Means for You." The New York Times. May 06, 2018. (Accessed November 05, 2018.)
https://www.nytimes.com/2018/05/06/technology/gdpr-european-privacy-law.html.; Brian X. Chen, "Getting a Flood of G.D.P.R.-Related Privacy Policy Updates? Read Them." The New York Times. May 23, 2018. (Accessed September 05, 2018.)
https://www.nytimes.com/2018/05/23/technology/personaltech/what-you-should-look-for-europe-data-law.html.; David Watts, "Data Privacy Controls and Vocabularies – Report." Same Origin Policy - Web Security. April 17, 2018. (Accessed September 03, 2018.) https://www.w3.org/2018/vocabws/report.html.
[130] "Building Digital Competencies to Benefit from Existing and ..." United Nations Conference on Trade and Development. March 01, 2008. 5. (Accessed September 06, 2018.)
http://unctad.org/meetings/en/SessionalDocuments/ecn162018d3_en.pdf.; Singer, and Valentine-DeVries. "Your Apps Know." December 10, 2018. (Accessed December 11, 2018.)
[131] Singer, "What You Don't Know." April 11, 2018. (Accessed September 05, 2018.); Glenn Greenwald, and Ewen MacAskill. "NSA Prism Program Taps in to User Data of Apple, Google and Others." The Guardian. June 07, 2013. (Accessed September 06, 2018.) https://www.theguardian.com/world/2013/jun/06/us-tech-giants-nsa-data.
[132] "OCHA Information Management Toolbox." Information Management Officers Toolkit. June 01, 2018. (Accessed October 05, 2018). https://humanitarian.atlassian.net/wiki/spaces/imtoolbox/overview.
[133] "Overview." World Food Programme. 2018. (Accessed November 29, 2018.) http://www1.wfp.org/overview; "WFP Guide to Personal Data Protection and Privacy." United Nations World Food Programme. June 2016. (Accessed October 1, 2018.) https://docs.wfp.org/api/documents/e8d24e70cc11448383495caca154cb97/download/.
[134] "WFP Guide to Personal Data Protection and Privacy." United Nations World Food Programme. June 2016. 108. (Accessed October 1, 2018.) https://docs.wfp.org/api/documents/e8d24e70cc11448383495caca154cb97/download/.; "Big Data for Development and Humanitarian Action: Towards Responsible Governance." Big Data for Development and Humanitarian Action Report: Global Pulse Privacy Advisory Group Meetings. October 2015. 10-11. (Accessed November 11, 2018.)
ht/unglobalpulse.org/sites/default/files/Big_Data_for_Development_and_Humanitarian_Action_Report_Final_0.pdf.

The Institute of Electrical and Electronics Engineers, the largest digital-standard-setting organization, recommends as a best practice that organizations dealing with software and computer engineering have designers utilize interdisciplinary approaches to involve relevant experts and advisory groups to include potentially vulnerable populations.[135] As well, UN organizations call for multistakeholder, multidisciplinary inclusion, in order to avoid misuse of planning for and use of data.[136] Offhand, these seem like good approaches, and for everyday operations such as food distribution in refugee encampments, these approaches do seem workable and inclusive.[137] It is less likely, however, that such actions would be taken or even make sense for disaster and emergency scenarios.[138] In addition, the UN call for user consent before gathering data is not possible during disasters, when private companies and crowdsourced deployments gather data through a multiplicity of ways, seeking prompt response on the ground. [139] Concerns for data anonymization and reverse de-anonymization occur throughout the

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[135] "IEEE-SA - The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems." IEEE-SA - The IEEE Standards Association - Home. 2017. (Accessed November 14, 2018). https://standards.ieee.org/industry-connections/ec/autonomous-systems.html.; IEEE. "Methodologies to Guide Ethical Research and Design." Ethically Aligned Design, Version 2. 2017. 55. (Accessed November 11, 2018.) https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead_methodologies_research_v2.pdf.

[136] "DATA PRIVACY, ETHICS AND PROTECTION GUIDANCE NOTE ON BIG ..." UNDG Guidance Note on Big Data for Achievement of the 2030 Agenda. 2016. 19. (Accessed November 11, 2018.) https://undg.org/wp-content/uploads/2017/11/UNDG_BigData_final_web.pdf.; "Progress Made in the Implementation of and Follow-up to the Outcomes of the World Summit on the Information Society at the Regional and International Levels." UNCTAD | Investment Country Profiles. March 01, 2018. (Accessed September 11, 2018.) http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1709.

[137] United Nations High Commissioner for Refugees, United Nations Development Programme, and The 3RP. *3RP Regional Refugee and Resilience Plan In Response to the Syria Crisis 2017 Annual Report*. Report. Regional Joint Secretariat. Amman, Jordan: UNHCR-UNDP Joint Secretariat, 2017. 2-3.

[138] Pulse, Global. "Using Satellite Imagery To Better Plan, Monitor and Measure Intervent..." LinkedIn SlideShare. April 20, 2018. (Accessed September 01, 2018.) https://www.slideshare.net/unglobalpulse/using-satellite-imagery-to-better-plan-monitor-and-measure-interventions. ; Bamberger, "Integrating BIG DATA." 2016. 23. (Accessed November 11, 2018.)

[139] "OCHA Information Management Toolbox." Information Management Officers Toolkit. June 01, 2018. (Accessed October 05, 2018.) https://humanitarian.atlassian.net/wiki/spaces/imtoolbox/overview.; "DATA PRIVACY, ETHICS AND PROTECTION GUIDANCE NOTE ON BIG ..." UNDG Guidance Note on Big Data for Achievement of the 2030 Agenda. 2016. 10. (Accessed November 11, 2018.) https://undg.org/wp-content/uploads/2017/11/UNDG_BigData_final_web.pdf.; Nguyen Hoang, et al. "Factors

literature, but they are left unanswered for the best solutions of how to deal with emergency data collection.[140]

The literature is in agreement that collaboration needs to be at the forefront of the next steps, yet the violation of privacy is not given explicit consideration as a rights violation during times of emergency. Instead, reports merely indicate that these considerations should be weighed.[141] Perhaps it is uncomfortable to argue for a message to remain private when people's lives potentially hang in the balance, but it is still an important interest that merits protection.

Influencing the Decision to Crowdsource:" 110. 2013. (Accessed October 14, 2018).; David Streitfeld"Tech Giants, Once Seen as Saviors, Are Now Viewed as Threats." The New York Times. October 12, 2017. (Accessed September 1, 2018.) https://www.nytimes.com/2017/10/12/technology/tech-giants-threats.html.

[140] Benjamin Heitmann, "Meta-data about Anonymised Data as a Means to Enable the ..." Privacy as an Enabler of the Data Economy. 2018. (Accessed September 21, 2018.) https://www.w3.org/2018/vocabws/presentations/Heitmann.pdf.; "DATA PRIVACY," 2016. 13. (Accessed November 11, 2018.); Kevin Murnane, "Google Limits Parent's Options While It Prepares New Parental Control Systems For Chrome." Forbes. January 17, 2018. (Accessed October 06, 2018.) https://www.forbes.com/sites/kevinmurnane/2018/01/17/google-limits-parents-options-while-it-prepares-new-parental-control-systems-for-chrome/.; Shishir Nagaraja, "P3CA: Private Anomaly Detection Across ISP Networks." P3CA Private Anomaly Detection Across ISP Networks. 2011. (Accessed October 05, 2018.) https://www.freehaven.net/anonbib/papers/pets2011/p3-nagaraja.pdf.

[141] "Privacy Perspectives | "Building Ethics into Privacy Frameworks for Big Data and AI": A Report from UN Global Pulse and the IAPP Related Reading: EDPS: We Need to Move the Needle on Ethics." Inside the EPrivacy Regulation's Furious Lobbying War. 2017. (Accessed September 02, 2018.) https://iapp.org/news/a/building-ethics-into-privacy-frameworks-for-big-data-and-ai-a-report-from-un-global-pulse-and-the-iapp/.

8. U.N. Mechanisms

Having considered the technological means behind crisismapping, the interests at stake, and the primary actors in the debate, this section focuses on the mechanisms for addressing privacy issues in the U.N. In particular, the section will focus on what might be the best avenue to answer these concerns, the Special Rapporteur on the the Right to Privacy (SRP), and the related complaint procedure.

Special Rapporteur on the Right to Privacy

Mandated by the United Nations, the SRP has done intensive work on the nuanced issues surrounding the right to privacy in the contemporary age since being chartered in 2015. As set out by the Human Rights Council, "The Special Rapporteur is mandated to promote and protect the right to privacy, particularly in the digital age. To that end, the Human Rights Council has requested the Special Rapporteur to seek credible and reliable information from Governments, non-governmental organizations and any other parties who have knowledge of pertinent situations and cases."[142] The SRP has looked at country policies, as well as holding meetings with all levels of stakeholders; these focus groups have helped to propel privacy policy and further investigations and remedies.

The SRP reported multiple updates in his 2018 report to the UN General Assembly about the various task forces that he had convened, and detailed important legislative updates surrounding the right to privacy in modern contexts. One such update on the major case of the United Kingdom Regulation of Investigatory Powers Act 2000 shows that the Special Rapporteur is keen to the privacy issues that arise with insufficient data safeguards.

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[142]"Office of the United Nations High Commissioner for Human Rights Special Rapporteur on the Right to Privacy: How to Submit Complaints?" OHCHR Special Rapporteur on the Right to Privacy. (Accessed March 26, 2019.) https://www.ohchr.org/EN/Issues/Privacy/SR/Pages/Howtosubmitcomplaints.aspx.Guidelines for submitting complaints and/or information to the Special Rapporteur on the right to privacy.

The ECHR recently found that the United Kingdom's bulk interception regime violated Article 8 of the European Convention on Human Rights (right to respect for private and family life/communications) due to insufficient oversight of the selection of internet bearers for interception and the filtering, search and selection of intercepted communications for examination, and inadequate safeguards for selection of "related communications data" for examination. The Court held the regime for obtaining communications data from communications service providers violated Article 8; and that both the regimes for bulk interception and for obtaining communications data from communications service providers violated Article 10 of the Convention due to insufficient safeguards for confidential journalistic material.[143]

This is salient to our topic as it again questions the proportionality of such measures when weighed against the privacy interests that they are meant to serve. However, it does not answer directly whether these safeguards may be bypassed in times of emergency.

SRP complaint procedure

One important mechanism of the SRP is the ability to engage with all levels of governance and civil society actors. Fact-finding and researching inquiries then serve as the basis for amendments, resolutions, and legislative proposals. One method of steering the SRP's investigations is through the open complaints procedure, where civil society actors, as well as public and private entities are able to report violations, or suspected violations, of the right to privacy for the SRP to potentially investigate. This is an important process that helps to engage stakeholders at all levels and shed light onto potentially unknown wrongdoings.

There are many instances that could be seen as violations. As per the website of the SRP, things that could be seen as a violation and grounds for reporting are:[144]

-The surveillance and/or interception of communications, including extraterritorial surveillance and/or interception of communications, in particular when carried on a mass scale

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[143] "Guide on Article 8 of the European Convention on Human Rights." 2017. (Accessed October 08, 2018.)

[144] "Office of the United Nations High Commissioner for Human Rights Special Rapporteur on the Right to Privacy: How to Submit Complaints?" OHCHR Special Rapporteur on the Right to Privacy. (Accessed March 26, 2019.) https://www.ohchr.org/EN/Issues/Privacy/SR/Pages/Howtosubmitcomplaints.aspx.

-The use, detention and retention of personal data by State and non-State actors – including corporate online businesses
-The use of forensic DNA databases
-The use of Open Data and Big Data

In the many inquiries that the SRP has considered, a mixed method of closed-door talks with high-ranking government officials and open forums have been used to formulate rigorous analysis of gaps in present law and regulations and to draft proposed legislative measures to ensure the maximum enjoyment of the right to privacy.

The process for reporting the alleged violations is simple, a person emails the SRP with a one page complaint that contains all of the following information. Note that there is no need for a formal letter; what is most important is to summarize in a one-page document (written in English or French) the following information:[145]

Where? The place(s) where the alleged violation(s) took place, including the country and city
When? Day when the alleged violation took place
Who is/are the alleged victim(s), indicating gender, first and last name, type of activity the victim(s) is/are undertaking, and whether they explicitly agree to having their identities disclosed to the relevant authorities and in the public report (see confidentiality policy above)
Who is/are the perpetrator(s), if known?
For non-State actors, description of how they relate to the State (e.g. cooperation with or support by State security forces);
What happened? Brief but detailed description of events that led you to write to the Special Rapporteur
What is the current situation? Time indications of all events are important, if available.
What actions have been taken? Has the matter been reported to the relevant authorities?
When the alleged violation concerns a draft bill, law or regulation, your email should include, among other things:
A electronic copy of the said draft bill, law or regulation, if available
Your analysis of the problematic legal provisions, ideally article by article
In the case of draft bills, an overview of the process by which they could become laws and where we are in this process today;
in the case of laws, if and how they have been implemented"

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[145] "Office of the United Nations High Commissioner for Human Rights Special Rapporteur on the Right to Privacy: How to Submit Complaints?" (Accessed March 26, 2019.)

In keeping with this challenge, we will attempt to here analyze what that would look like under the guidelines.

Sample Complaint
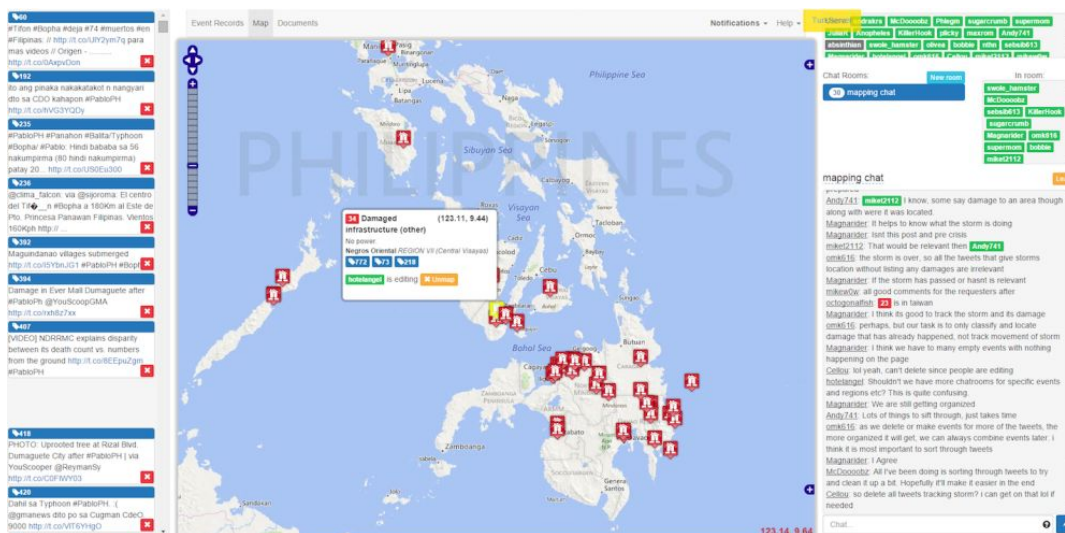
Figure 8.1 Crisismap of Typhoon Pablo

Backstory

While we could pick any number of the "social media deployments" that have taken place recently in response to natural disasters across the world, we will use the 2013 supertyphoon Hayian in the Philippines, also known as Typhoon Yolanda. The Philippines is one of the most socially connected and digitally networked places in the world. There are more than 100 million people living in the Philippines and the supertyphoon affected 16 million people.[146] Spending an average of four hours a day on social media sites, the Philippines is known as the social media capital of the world.[147] As well, the typhoon happened in one of the earlier stages of

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[146] The World Bank, United Nations Population Division, United Nations Statistical Division, Secretariat of the Pacific Community, U.S. Census Bureau: International Database, and Eurostat: Demographic Statistics. "Population, Total." Population Total. 2018. (Accessed December 01, 2018.) https://data.worldbank.org/indicator/SP.POP.TOTL.; "Typhoon Haiyan." U.S. Agency for International Development. 2014. (Accessed December 17, 2018.) https://www.usaid.gov/sites/default/files/documents/1866/philippines_ty_fs22_04-21-2014.pdf.

[147] Chrys Pablo, Mari. "Internet Inaccessibility Plagues "Social Media Capital of the World"." The Asia Foundation. October 2018. (Accessed November 11, 2018.)

the development and use of this technology, when it was largely unknown to the general public. This demonstration will give us a picture of events that happened when people reach out through digital technologies to utilize every method available to them to transmit their circumstances and need.

Complaint Qualifications

Where? The place(s) where the alleged violation(s) took place, including the country and city.
2013 supertyphoon Hayian in the Philippines, also known as Typhoon Yolanda.

When? Day when the alleged violation took place.
We will use the first day of the typhoon. November 08, 2013.[148]

Who is/are the alleged victim(s), indicating gender, first and last name, type of activity the victim(s) is/are undertaking, and whether they explicitly agree to having their identities disclosed to the relevant authorities and in the public report (see confidentiality policy above)
Since we are alleging the rights of a number of people have been violated, we will instead say the people of Leyte Province and the people of Samar Province in the Philippines, which were areas that were particularly hard hit. No individual names will be given here. The victims, male and female of varying age ranges, were posting their whereabouts and general states of safety during and immediately after the typhoon made landfall.

Who is/are the perpetrator(s), if known?
The perpetrators were the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and its agents. OCHA is not only complicit in the alleged violations, but seeks out the means with which these violations have been committed. OCHA is the body who

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https://asiafoundation.org/2018/10/24/internet-inaccessibility-plagues-social-media-capital-of-the-world.; "Digital in 2018: World's Internet Users Pass the 4 Billion Mark." We Are Social. January 30, 2018. (Accessed October 06, 2018.) https://wearesocial.com/blog/2018/01/global-digital-report-2018.
[148] "Typhoon Haiyan." U.S. Agency for International Development. 2014. (Accessed December 17, 2018.)

ultimately bears the burden of rights protection here. Other organizations were part of the overall deployment, but it is OCHA who has been the main actor by utilizing these workflows and further soliciting such assistance. We will unpack its agent relationships here.

The Digital Humanitarian Network is a consortium, a "network of networks." It is a collection of organizations who specialize in an aspect of the digital disaster response landscape. Together, their respective specializations are called upon during deployments in emergencies to help create the most accurate real-time situation reports possible. A lot of the work done through these organizations is done on a volunteer, crowd-sourced basis. While the power of "the crowd" has been much praised for its ability to synthesize and work with large amounts of data in short amounts of time, thus acting as capacity building agents, this has the effect of thwarting traditional constraints on responders. However, the "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." [149]

The largest responses during Haiyan was Humanitarian OpenStreetMap (HOT).[150] They used satellite imagery as well as drone imagery. From this information, volunteers were able to "map" almost 5 million changes during and immediately after the disaster.[151]

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[149] Dmitry Chernobrov, "Digital Volunteer Networks and Humanitarian Crisis Reporting." Taylor & Francis. May 2018. (Accessed November 11, 2018.) https://www.tandfonline.com/doi/full/10.1080/21670811.2018.1462666?scroll=top&needAccess=true.
[150] Nicolas Audebert, Bertrand Le Saux, and Sebastien Lefevre. "Joint Learning from Earth Observation and OpenStreetMap Data to Get Faster Better Semantic Maps." *2017 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*1, no. 1 (May 17, 2017). (Accessed September 14, 2018.) doi:10.1109/cvprw.2017.199.
[151] Pascal Neis, "To All 1,679 Voluntary Contributors of the OpenStreetMap Project for Typhoon Haiyan (2013) Who Made More than 4,799,290 Map Changes." OpenStreetMap Activities for Typhoon Haiyan (2013) 2014. (Accessed December 17, 2018.) http://resultmaps.neis-one.org/osm-typhoon-haiyan-2013-contributors.

Another group, the Standby Task Force, has tapped more than one million tweets, text messages and other social-media objects to track the unfolding disaster and to map damage, infrastructure, and user needs.[152] The group used MicroMappers, which is a suite of apps designed for disaster-response efforts--that which enables anyone to tag tweets or photos to show that they indicate infrastructure damage or population displacements.[153]

For non-State actors, description of how they relate to the State (e.g. cooperation with or support by State security forces);

Non-State actors supplying States—here, the Philippines—with a curated view of their citizens' information in order to create the most timely picture of the situation on the ground. If a State did not want this information, or did not find it credible, then the responding aid agencies—here, OCHA—may still use this information to drive their response. If the government were not amenable to using this information but still allowed OCHA and other responding aid agencies to carry out their responses with this information as the backbone of their deployment, then the State itself would be tacitly allowing the violations to not only happen but also act as a form of acquiescence that would encourage these actions in the future.

What happened? Brief but detailed description of events that led you to write to the Special Rapporteur;

Simply put, the personal information of millions of Filipino citizens was taken without their knowledge or consent during Typhoon Haiyan and then used to triage the aid response based off of their information.

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[152] Declan Butler, "Crowdsourcing Goes Mainstream in Typhoon Haiyan Response." Scientific American. November 20, 2013. (Accessed January 11, 2019.) https://www.scientificamerican.com/article/crowdsourcing-goes-mainstream-in-typhoon-haiyan-response/.
[153] Declan Butler, "Crowdsourcing Goes Mainstream." November 20, 2013. (Accessed January 11, 2019.)

What is the current situation? Time indications of all events are important, if available.

In the current situation, this information is still being cultivated and curated in times of emergency. The location of these deployments changes to follow natural disasters at hand, though there appears to be tacit collection of information during times of calm through the use of these monitoring methods.

What actions have been taken? Has the matter been reported to the relevant authorities?

There appears to not be any relevant authorities to receive this information who focus on privacy during emergencies. If the protocols and workflows are not amended in times of calm to ensure the maximum fulfillment of human rights, then in times of emergencies, it would seem to be a disservice to not utilize all methods of triage and much needed information in order to attempt to save the maximum number of people with the limited resources at hand.

There are not adequate legal means of recourse for action to be taken directly against an individual State. The State relies on external aid from the United Nations vested agency. Where the State could be said to gain from effective disaster response, the initiating agencies exist at the international and NGO-levels to address this issue.

Summary

Using Typhoon Haiyan as an illustration, this complaint shows the mechanisms to initiate a complaint with the SRP to investigate privacy during times of emergency. The details of the complaint bring out the blurred lines defining who remains culpable and who does not by the crisismapping process, but the SRP, using its power to initiate a multistakeholder process at the

international level, can transcend these difficult questions. The next question asks how he should

reach a ruling on these issues.

9. Thought Experiment: Assistance Without Frontiers

Imagine that a group of doctors from MSF, Doctors Without Borders, broke into your house while you were sleeping and went through your phone and computer. They copied down all information that they were able to find, including opening all of your applications and social media accounts to check what you had posted and what all of your friends, family, and acquaintances had posted. They copied down all of this information, as well as looking at any search engines you had visited and any searches you had made, copying down your search history, even if you were in a secret or incognito mode. The doctors then copied down all of your posted photographs and video-clips that you had posted onto those accounts, online, or that you had been "tagged in" within the past few days, checking the location sensors on your phone to see where you were when you took the photos, videos, and looked up these things. Before they left, they made copies of that information too.

The doctors then left your house, quickly. Very quickly. They were able to get in and out, and get all of your information within one to two minutes. They were able to bypass any alarms or early warning systems that you may have set up on your house or property, and they were able to bypass any encryption, password protections, and privacy settings that you had set up to safeguard your information and activity online. Is this action by the doctors morally permissible?

Consider now if your neighbor's house is on fire, and there is no way to know if they were home or not? Should it matter if those doctors had broken into your house to find out information vital to saving your neighbor from a fire? Is it okay for the doctors to try to decode your neighbor's whereabouts by trying to sift through your digital footprint? Would you think differently if your neighbor were physically disabled and lived alone? If this information were being used to triage aid to a person a little bit further away in the world would your calculus

change? Here, imagine a person in say Madagascar—we shall call her Pilau—a young female in danger from a natural disaster. Would you be okay with the doctors breaking in to get information that could perhaps help save Pilau? Are there *any* privacy lines that should not be crossed even if there is some chance the information could save a life?

Crisismapping facilitates such actions, and the lax or nonexistent privacy protocols facilitate the ease that information without the knowledge and control of the user. Because of these lax regulations, it is important to note that MSF does not perpetrate any crime here; the break-in is only used to make vivid the issues at hand. This thought experiment has not happened, but it is not difficult to see that the situation is not so different from what is presently happening within crisismapping.

We should wonder at the fact that we have different intuitions based upon the proximity of the person in relation or space to us, as this helps to show the nuance with the layers of factors that come into play with making such difficult decisions about our everyday lives and with whom we are most comfortable sharing our information and for what reasons.

What We Owe to Pilau

Given these competing intuitions and the competing interests outlined in earlier sections, we need a method to resolve the tensions between conflicting intuitions about the interest in privacy and the interest in effective triage. We can specify our central question as follows,

Problem Statement: ***Do the invasive methods used to conduct the most effective triage come at too high of a cost to privacy, such that we should seek alternative methods or regulations?***

The difficulty answering this central question lies in the fact that there are competing reasons that weigh in favor of each side. The reasons to say no, the invasive methods do not come at too high of a cost, are basic human interests in safety, security, and health. As in the thought

experiment, applications of technology in emergency response have the potential to save lives, and when they are applied at scale in a major natural disaster or other emergency, where every second of efficiency gains in the delivery of triage matters, these technologies certainly do save lives. Moreover, life-saving aid is delivered to people at their most vulnerable; it is targeted directly to those already suffering from a disaster or emergency, and it potentially alleviates their suffering. As we have seen, it does so by making triage more efficient, delivering aid where it is needed at least cost in time and resources, utilizing the available information to target that aid where it is needed most. These targeted interventions lead to fewer errors in disaster response, less wasted time delivering effective aid, and fewer wasted resources through aid that goes unused. Each of these reasons would suggest that there are strong normative reasons to collect this data and utilize it for effective triage.

However, our intuitions about the thought experiment are not so clear cut, suggesting that there are reasons to limit data use. Even if there are tangible benefits to the technology, there are privacy protections that should not be violated. As detailed in section 4, privacy is not just an independent human right. It facilitates other important rights, including personal autonomy and the right to free expression. To achieve this foundational role, privacy must not only be protected most of the time—perhaps excluding exigent circumstances like an emergency—it must be assured that it will be always protected. A citizen can never feel free expressing her political dissent in private to her fellow citizens if an ensuing crisismapping deployment could collect this communication and expose her to punishment or detention. Just as there are reasons to build a bubble of protection around our home environment, there are strong reasons to build a bubble of protection around our communications and search histories.

The task then is to weigh these competing interests. Four potential decision procedures can resolve these conflicting interests.

(1) Representative Institution

The most obvious resolution would ask a democratic government or representative body like the UN general assembly to determine the interests of its people. Given that States are human-rights duty bearers, deciding these issues democratically would seem to be the most natural option, at least where those procedures are available. The difficulties here are twofold. First, the legislative body may serve the interests of the State, rather than the interests of its people. Second, many States lack any credible democratic body to decide.

States, especially those lacking robust democratic procedures can benefit from having the most information possible about their citizens. This curated information can be used for a multitude of purposes, both good and bad, stretching beyond the needs of emergency aid and rescue. A government's vested interest in access to citizen data makes them biased.

One might initially object that States can and should curb this bias based on the human rights accountability mechanisms that make States the bears of human rights duties. If effective, these limits would delimit this power in times of calm. This objection misunderstands the important of the weighing of the interests at hand. If we believe that a representative body is the correct body to weigh these interests, then their evaluation would *determine what the right to privacy entails*. This is a method to determine the proportional importance of each interest. Once that is determined, the international organizations would have no grounds to delimit its scope. This "free card" might be too valuable for governments to turn down, making them biased towards their own aims and away from exerting the morality and restraint needed to make a fair decision.

Bias is not an idle concern. There are already cases of governments who have either wanted to co-opt the aid process or remove themselves from it completely. For instance, China has refused aid from the West, and even U.N. aid agencies, during times of disaster. While we can speculate widely regarding this resistance, China's wish to remain behind the Great Firewall is heavy among the reasons. China's politics has even influence other countries' aid protocols, resulting in a loss of resources and lives in disasters. For example, in the 2015 Nepal earthquake, Nepal refused much-needed aid from Taiwan as an effort to remain favor with China.[154] The refusal of Nepal to fully cooperate led to a marked loss of life and expressed itself during a politically tumultuous time where their newly formed government wanted to appear as strong as possible. Turning away donations was taken to be a sign of strength.[155]

For these reasons, governments are not appropriate arbiters of this important decision. Emergency and post-emergency gray areas allow them to operate with freedom and allow potential abuses and derogations of human rights. These abuses cannot be overlooked.

(2) Mini-Public

A mini-public is an institution similar to a grand jury, which would gather a sampling of citizens, hopefully including Pilau, and brief them on the critical interests at stake. A mini-public is a participatory decision-making model that brings together a diverse group of citizens and stakeholders to learn and deliberate about a particular policy issue.[156] The idea is to educate a

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[154] Austin Ramzy, "Nepal Rejects Taiwanese Offer of Rescue Help, but Accepts Medical Aid." The New York Times. April 27, 2015. (Accessed January 03, 2019.) https://www.nytimes.com/live/earthquake-katmandu-nepal-updates/nepal-rejects-taiwans-offer-to-help-rescue-efforts-but-accepts-medical-help/.

[155] "Access Denied: China's Enforced Isolation of Tibet, and the Case for Reciprocity." International Campaign for Tibet. May 10, 2018. (Accessed January 03, 2019.) https://www.savetibet.org/access-denied-chinas-enforced-isolation-of-tibet-and-the-case-for-reciprocity/.

[156] Oliver Escobar, and Stephen Elstub. *Forms of Mini-publics*. Report. New Democracy. May 08, 2017. (Accessed February 17, 2019.) https://newdemocracy.com.au/wp-content/uploads/2017/05/docs_researchnotes_2017_May_nDF_RN_20170508_FormsOfMiniPublics.pdf.

representative sample of the actual citizens and then allow them to weigh the interests at stake. With an adequate understanding of the competing interests in privacy and in effective triage, they would be able to make an informed decision about whether the benefits are worth the drawbacks. If the mini-public holds that the interests in triage outweigh the interests in privacy, then we would need to respect their wishes. If the mini-public believes that data privacy should be privileged over the potential for effective triage in some circumstances, then we would alter the present protocols.

Two major difficulties stand in the way of using mini-publics as a decision procedure at the international level. First, when it comes to advanced digital technology, it is difficult to imagine a short process to educate a random selection of disaster-ridden areas. Understanding privacy concerns is not merely a matter of information; it is also a matter of appreciating the dangers—an appreciation that only comes after experience. Second, it may be difficult for a mini-public to gain the legitimacy and public trust to make these important judgments. Where people are drawn from all over the world, participatory mechanisms may simply be too alienated from the relevant communities to feel inclusive of their interests. These two reasons make mini-publics challenging in this application even if they are promising in general.

(3) Hypothetical Reasonable Person

A hypothetical reasonable-person standard would imagine a person ideally suited to weigh these interests and project hypothetically how she might answer the questions. We would imagine a person, for example, from an area susceptible to natural disasters and also susceptible to the data breaches at issue here. That person's judgment would determine the appropriate weighing of the interests in effective triage and in privacy.

The idea of a hypothetical person standard is that a fair decision would weigh the interests from an impartial and fully informed perspective. Drawing on the same intuitions that underlie John Rawls's famous original position, the hypothetical-person standard would construct a situation where a person could truly be impartial.[157] Under this approach, we would try to construct a hypothetical Pilau and then imagine how she would answer the question if she were fully informed.

The idea of a hypothetical-person standard is to address two of the key issues that arose in (1) and (2). A hypothetical-person standard avoids bias by constructing a circumstance where an individual can avoid bias, and it projects full information onto that individual, avoiding the difficulties of educating actual people over time. A hypothetical standard makes the most sense where an actual procedure is infeasible because we cannot put any particular group in the right circumstances to make the decision.

However, hypothetical standards have clear drawbacks. First, it is difficult to predict what Pilau would actually say in these circumstances without actually asking individuals in the relevant circumstances. It is easy to project our own biases onto a hypothetical decision maker, even if we try to construct her as impartial, and these concerns are particularly acute here, where the relevant potential victims live in circumstances far different from many researchers. In addition, hypothetical standards may lack the legitimacy of an actual procedure, which includes diverse voices and gives interested parties the opportunity to express interests and see the decision made.

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[157] Rawls, John. *A Theory of Justice*. Cambridge, MA: Belknap Press, 1971.

The final decision procedure would work within the procedures and processes, established by the Special Rapporteur on the Right to Privacy, as detailed in section 8. The SRP brings together a variety of stakeholders, States, and agencies with relevant expertise and interests to the relevant privacy issues. Critically, the SRP must consider the interests and perspectives of the least powerful in weighing the right to privacy—those who have most to lose both in a disaster and in invasions of privacy.

In theory, it is easy to criticize these stakeholders as potentially biased and ineffective, succumbing to interests of power, rather than interests of fairness. However, after considering the feasibility limitations of the previous three decision procedures—each with some claim to fairer procedure in theory—we see that practical considerations speak strongly in favor of working within existing international procedures set up by the SRP. Such procedures are admittedly imperfect, but they can bend toward justice by bringing a wide range of perspectives to the table and weighing those interests in good faith.

10. Exigence

Data technology brings normative presuppositions to light by making tradeoffs in effective aid and personal liberties more poignant. While these issues plague the most disaster-prone regions and States globally, the incorporation and utilization of these workflows into normative frameworks by aid agencies would bring relief to the most vulnerable of global citizens.[158] If we do not ask the important questions about these cutting-edge applications of technology that exceed the current legal framework, then we risk pervasive side effects and missed opportunities.[159]

Even the most caring of governments and agencies can mismanage data unintentionally by failing to carefully consider the risks or ignoring the privacy costs. Data breaches are even more alarming and impactful when they happen to disaster survivors who are trying to rebuild their lives in the wake of destruction and death. For example, lacking proper protocols, the U.S. Federal Emergency Management Agency (FEMA) accidentally sold information of 2.5 million recent U.S. disaster survivors to a contractor, including sensitive banking data.[160] These mistakes cannot be allowed to persist without proper oversight.

Digital privacy awareness and policy has never been more important than it is today. From triage to tracking our daily lives, we produce more data than ever, and more and more companies want access to it.[161] The *New York Times* found, "At least 75 companies receive

[158] "Report on the Twenty-first Session: Commission on Science and Technology for Development." United Nations Conference on Trade and Development. May 14, 2018. (Accessed November 05, 2018). https://unctad.org/meetings/en/SessionalDocuments/ecn162018d4_en.pdf.

[159] Wadhwa, "Laws and Ethics Can't Keep Pace with Technology." 2014. (Accessed October 14, 2018).

[160] Gregory Wallace, "FEMA Shared 2.3 Million Disaster Survivors' Personal Information with Contractor." CNN. March 23, 2019. (Accessed March 26, 2019.) https://www.cnn.com/2019/03/22/politics/fema-shared-information/index.html.

[161] Bobby Allyn, "Digital Ambulance Chasers? Law Firms Send Ads To Patients' Phones Inside ERs." NPR. May 25, 2018. (Accessed October 05, 2018.)

anonymous, precise location data from apps whose users enable location services to get local news and weather or other information."[162] Several of those businesses claim to track up to 200 million mobile devices in the United States. The database reviewed by the *Times* — a sample of information gathered in 2017 and held by one company — reveals people's travels in startling detail, accurate to within a few yards and in some cases updated more than 14,000 times a day." [163] That disclosure is often buried in a vague privacy policy that is opaque to critical stakeholders and victims who suffer the consequences of exposure. "Of the 17 apps that The Times saw sending precise location data, just three on iOS and one on Android told users in a prompt during the permission process that the information could be used for advertising."[164]

In 2016, global insured losses ranked as the sixth-most on record. These losses were almost entirely driven by the flooding, earthquake, severe weather, and tropical cyclone perils, which accounted for 85 percent of all global natural disaster losses.[165] It is important to note that security and privacy are mutually dependent. These protections and safeguards minimize vulnerabilities to security threats and mitigate the harm caused by unauthorized access, collection, deletion, modification, and disclosure of data.[166] Each of these exigencies show the pressing need for a Special Rapporteur to convene immediately on these issues, weighing

https://www.npr.org/sections/health-shots/2018/05/25/613127311/digital-ambulance-chasers-law-firms-send-ads-to-patients-phones-inside-ers.

[162] Warzel, "Privacy Is Too Big to Understand." April 16, 2019. (Accessed April 16, 2019.)

[163] Singer, and Valentine-DeVries. "The Business of Selling." December 10, 2018. (Accessed December 11, 2018.)

[164] Warzel, "Privacy Is Too Big to Understand." April 16, 2019. (Accessed April 16, 2019.)

[165] AON. "Annual Climate Catastrophe Report." Thoughtleadership.aonbenfield.com. 2017. (Accessed November 11, 2018.)

http://thoughtleadership.aonbenfield.com/Documents/20170117-ab-if-annual-climate-catastrophe-report.pd. pp. 1-2

[166] Jane Applegate, "MEDIA CHALLENGED BY CHANGING NATURE OF CYBERCRIME." Workshop on the Economics of Information Security. June 15, 2008. (Accessed September 11, 2018.)

http://mba.tuck.dartmouth.edu/digital/Programs/Seminars/WEIS/WEIS_media.pdf.; Jane Applegate, "MILLIONS INVESTED IN FIGHTING CYBERCRIME AROUND THE WORLD." Workshop on the Economics of Information Security. June 15, 2008. (Accessed October 11, 2018.)

http://mba.tuck.dartmouth.edu/digital/Programs/Seminars/WEIS/WEIS_cybercrime.pdf.

https://www.unodc.org/e4j/en/cybercrime/module-10/key-issues/privacy-what-it-is-and-why-it-is-important.html

interests in a way that considers the perspectives of the most vulnerable and offers them a seat at the table to weigh these competing important interests.

11. Conclusion

With the number of gadgets that people use to connect themselves to the outside world multiplying at over five times the rate of humans, weighing the nuances of digital privacy is more important than ever.[167] This paper has emphasized one key frontier of digital privacy—crisismapping in a disaster zone—in an effort to identify the relevant interests, stakeholders, laws, and procedures to weighing digital privacy issues. The paper has argued that there are fundamental interests at stake both in the protection of privacy and in the delivery of effective triage in a disaster, and these competing interests call for a fair decision procedure to weigh them. After considering four potential decision procedures, the paper calls for a decision through the the Special Rapporteur on the Right to Privacy, an imperfect approach that nonetheless does the best feasible job of bringing diverse interests, perspectives, and stakeholders to the table. "Finally, as new types of data are being discovered and used, new risks and types of harm may arise. The potential and impact of data is being discovered through collaborative research and experimentation requires engagement with different experts and stakeholders."[168]

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[167] Zachary Davies Boren, "There Are Officially More Mobile Devices than People in the World." The Independent. October 07, 2014. (Accessed November 09, 2018.)
https://www.independent.co.uk/life-style/gadgets-and-tech/news/there-are-officially-more-mobile-devices-than-people-in-the-world-9780518.html.

[168] "Big Data for Development and Humanitarian Action: Towards Responsible Governance." October 2015. (Accessed November 11, 2018.);
 Furthermore the United Nations Global Pulse calls for a similarly collaborative approach; "Therefore, creation of such frameworks should involve consultations with a variety of expert stakeholders, including humanitarian and development decision-makers, the private sector (e.g., data controllers), researchers, regulators and representatives of affected populations. An inclusive and adequately transparent process may help organisations in gaining public trust and may ensure accountability as well as higher impact of innovation." Which further goes on to outline specific organizations already engaged in such work "Examples of expert research concentrated solely on privacy and data protection include Access Now, Privacy International, Brussels Privacy Hub, and many others. Collaborative research in this area is also done by many organisations that bring together a variety of expertise– examples include International Data Responsibility Group (IDRG), Data& Society, The Engine Room, The GovLab, and others."

Thus, this paper calls upon the Special Rapporteur on the Right to Privacy to continue their work in their second term by considering critical issues in digital humanitarianism. This work will engage "with civil society, Governments, law enforcement, intelligence services, data protection authorities, intelligence oversight authorities, academics, corporations and other stakeholders."[169] In particular, it must engage with the potential victims who stand to gain and benefit most from the use of digital technologies. The number of global citizens in need of humanitarian assistance has doubled in just ten years, and these are voices that must be heard.[170] Privacy interests do not disappear at the onset of disaster.

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[169] "Special Rapporteur on Privacy." Office of the High Commissioner on Human Rights: Special Rapporteur on Privacy. 2015. (Accessed December 16, 2018.)
https://www.ohchr.org/EN/Issues/Privacy/SR/Pages/SRPrivacyIndex.aspx.
[170] "Big Data for Development and Humanitarian Action: Towards Responsible Governance." October 2015. (Accessed November 11, 2018.)

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End Notes
Citations

These citations are in Chicago style and I utilize the footnote method that includes date accessed and URL when using a source adapted for the web. Citation Machine was used to generate the formatting, and I double checked the bibliographic sources in order to properly format them for in-text citations using footnotes. This paper is "Report" heavy and the proper Chicago-style 16 report-format was used, including all of the information available. Bluebook suggestion was offered for UN treaties, and I tried to follow that when possible. The recommended multiple citation style of full, amended footnote for the first cite per page, followed by the author, title, year, and page, for the immediate second instance, and then the author, shortened title, page number for the next instance, and then the Ibid used for further immediate citations. In the several instances that a sentence contained multiple references, the references are listed in the footnotes, in the order that they were referenced. I included all sources in my bibliography that I had originally used in pre-edited versions of the paper, as well as, sources that heavily influenced my thought process and research as these all helped to steer the tone and tenor of the paper.