An Emerging Instrumentalism for Human Security

Technology for Monitoring Human Rights in Conflict Zones:
Early 21st Century Uses and Implications for a Likely Future Trajectory

A thesis submitted to the Center for Global Affairs at New York University in partial fulfillment of the requirements for the degree of Master of Science in Global Affairs

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Definition of Terms

AAAA – American Association for the Advancement of Science
AI – Amnesty International
GIS – Geographical Information Systems
GPS – Global Positioning Systems
HRO – Human Rights Organization
HRW – Human Rights Watch
ICC – International Criminal Court
ICRC – International Committee of the Red Cross
ICT – Information Communication Technology
ICT4Peace Foundation – Information Communication Technology for Peace Foundation
IGO – Intergovernmental Organization
R2P – Responsibility to Protect
SBTF – Standby Task Force
UAV – Unmanned Ariel Vehicle
UN – United Nations
UNHCR – United Nations Human Rights Council
UNITAR – United Nations Institute for Training and Research
UNOCHA – United Nations Office for the Coordination of Human Affairs
UNOSAT - UNITAR's Operational Satellite Application Programme
USAID – United States Agency for International Development
WHO – World Health Organization

Introduction

Significant advancements in technology have greatly enhanced the abilities of Human Rights Organizations (HROs) to monitor human rights in conflict zones. Examples include the use of social media and geospatial technology by UNOCHA to map the crisis in Libya (Meier 1246-1247), the use of remote sensing by the American Association for the Advancement of Science and Human Rights Watch to capture evidence of violence against civilians in the Democratic Republic of the Congo ("Evidence of Destruction in the Democratic Republic of the Congo") and the use of mobile phones by Souktel, a mobile phone services provider, and Al Jazeera to create a "'Citizen Reporting'" service for Palestinians during the 2009 Gaza conflict (Meier 7-8). These cases show that technology is being used more and more in a variety of ways to help vulnerable populations in areas of armed combat. However, my research shows a need for even more advanced technology for this effort.

Scope of the term "conflict zone" for this MSGA thesis

The term "conflict zone" can be interpreted in different ways. For this MSGA thesis, conflict zone is defined as any area or situation where there is armed conflict, which includes areas of active interstate or intrastate conflict and as well as other situations that have turned violent, such as elections, protests or demonstrations. The clamp down on the Muslim Brotherhood protesters in Egypt is a recent example. All of these situations create a greater chance for violations of human rights to occur and a greater need for monitoring them.

Background

The history of HROs working in conflict zones dates back to the 1800s. The International Committee of the Red Cross (ICRC) states in its mission that since its inception in 1863, its "sole objective has been to ensure protection and assistance for victims of armed conflict and strife" ("History of the ICRC"). The organization was active in the First World War, campaigning against the use of mustard gas by combatants and entering battlefields to aid the wounded (Ibid). The ICRC continued to protect victims in the Second World War as well (Ibid). In addition to providing aid, the organization has also been significantly involved in the creation of international laws of armed combat. The most prominent of these are the Geneva Conventions, "designed to protect wounded and sick members of armed forces in the field; wounded, sick and shipwrecked members of armed forces at sea; prisoners of war; and civilian non-combatants", as well as the two additional protocols to the Geneva Conventions added in 1977 covering international and internal situations of combat (Donoff, Ratner, and Wippman 499-500). Additionally, the ICRC has a special status to monitor compliance of these laws (Ibid).

During the Cold War era, two other prominent HROs, Amnesty International and Human Rights Watch, emerged. Amnesty International (AI) was started in 1961 by a British Lawyer who appealed for the rights of two Portuguese students jailed for "raising a toast to freedom" ("The History of Amnesty International"). Over the years the organization continued to campaign for prisoners of conscience, as well as for other human rights such as the abolition of torture and the rights of refugees (Ibid). In 1991, AI began monitoring abuses by armed groups and campaigned for a permanent International Criminal Court in 1996 (Ibid).

Human Rights Watch (HRW), another well-known HRO, was started in 1978 and active in monitoring human rights in Central America during the civil wars there, as well as foreign governments providing "military and political support to abusive regimes" ("Our History | Human

Rights Watch"). The organization also monitored the Persian Gulf War and reported and documented violations in Rwanda and the Balkans (Ibid). HRW was pivotal in preparing the Rome Statute, which led to the creation of the International Criminal Court and worked to expose issues of armed conflict including the rights of refugees, child soldiers, and “rape as a war crime” (Ibid). Additionally, HRW was a founding member of the International Campaign to Ban Landmines and played a key role in the 2008 cluster munitions treaty (Ibid). HRW, along with the ICRC and AI, was foundational in the development and implementation of International Humanitarian Law (discussed subsequently in more detail). These organizations continue to be leaders in the effort to monitor human rights in conflict zones.

International Humanitarian Law

HROs work within a legal framework to monitor human rights in conflict zones to expose abuses, protect those at risk of being abused, deter abusive combatants from committing human rights violations, and curtail impunity. International Humanitarian Law clarifies the types of abuses being committed and when they are committed. The threat of breaking international law can deter would be perpetrators and therefore protect innocents from the abuse. Further, the International Criminal Court can try perpetrators and help to diminish impunity.

International Humanitarian Law is administered to the parties of armed conflict. ("War and International Humanitarian Law"). As mentioned earlier, it is based on the Geneva Conventions, the first three of which refer to the protection of soldiers that are wounded or sick during conflict and prisoners of war (Ibid). The fourth Geneva Convention, adopted in 1949, added the protection of “civilian non-combatants” (Donoff, Ratner, and Wippman 499) following World War II, which showed the calamitous effects of war on civilians ("War and International Humanitarian Law").

While these laws were a major step toward more comprehensive human rights protection during armed conflict, the types of armed conflicts have drastically changed since 1949, becoming increasingly more intrastate. There were 52 intrastate conflicts in 1992 ("Conflict Type") and 23 intrastate conflicts in 2012 ("UCDP Actor Dataset"). Common Article 3 of the Geneva Conventions was added to cover non-interstate conflicts including civil wars and internal armed conflicts and calls for “humane treatment for all persons in enemy hands”. The article “prohibits murder, mutilation, torture, cruel, humiliating and degrading treatment, the taking of hostages and unfair trial” ("The Geneva Conventions of 1949 and Their Additional Protocols"). Additionally, Protocol II to the Geneva Conventions, added in 1977, expands the safeguards for civilians affected by internal conflicts (Donoff, Ratner, and Wippman 500). These additional international laws are important for monitoring human rights in conflict zones of contemporary armed conflict.

Other specific laws have also been created to address certain kinds of atrocities committed during armed conflict. The Convention on the Prevention and Punishment of the Crime of Genocide became international law in 1951 (Schabas). It maintains that “’genocide is a crime under international law” and “a crime of intentional destruction of national, ethnic, racial and religious group, in whole or in part” (Ibid). It pertains specifically to crimes committed in order to eradicate a specific group of people (Ibid).

There are also other more specific legal instruments to regulate situations of armed conflict. “The Declaration on the Protection of Women and Children in Emergency and Armed Conflict”, adopted by the General Assembly in 1974, outlaws and condemns attacks on women and children in conflict zones, prohibiting their “persecution, torture, punitive measures, degrading treatment and violence…”, and underlines their right to “shelter, food, medical aid or other inalienable rights…” ("Declaration on the Protection of Women and Children"). Also, pertaining specifically to gender, Security Council Resolutions 1325 and 1820, adopted in 2000

and 2008 respectively, call on all parties of armed conflict to respect international laws "applicable to the rights and protection of women and girls…" and to "take special measures to protect women and girls from gender-based violence, particularly rape and other forms of sexual abuse, and all other forms of violence in situations of armed conflict" (United Nations). These resolutions further state that "rape and other forms of sexual violence can constitute a war crime, a crime against humanity, or a constitutive act with respect to genocide" (United Nations).

The continued importance of these international laws of armed conflict is underlined by current conflicts around the world. At the end of 2012, *Foreign Policy* published a list of conflicts to watch in 2013, some of which are the Syrian civil war, the conflict between the Sudanese government and the Sudan Revolutionary Front, the conflict between the Malian government and Islamist fighters in the North, the conflict between the Nigerian government and the Boko Haram, and the conflict between the government of the Democratic Republic of the Congo and the M23 Rebels (Arbour). HROs will need to continue to refer to International Humanitarian Law in order to monitor human rights in these areas.

Human Security and R2P

As International Humanitarian Law has evolved, so has the concept of human security (Canada). In contrast with national security, human security focuses on securing individuals rather than securing borders ("Human Security Backgrounder"). The idea of human security gives further weight to advocacy efforts for effected populations in conflict zones when appealing for their protection from national and international government leaders. For example, HROs have called on government leaders to act in Syria, including AI's appeal to "Russia and other countries" to halt attacks by the Syrian regime on the city of Homs in February 2012 (Amnesty International), HRW's call for the UN Security Council to address the Syrian crisis in

February 2012 (Bekele and Bolopion), and the International Crisis Group's adjuration to the UN to negotiate a transfer of power in Syria in March 2012 (*Now or Never: A Negotiated Transition for Syria*). Pleas by high profile HROs like these can greatly impact how leaders choose to address these conflicts.

Established in 2005, the international document that guides those in power to protect civilians in the absence of the protection by their host country is the Responsibility to Protect (R2P) ("The Responsibility to Protect"). The idea of R2P was fully described in a report by the International Commission on Intervention and State Sovereignty in 2001, as a response to Kofi Annan's challenge of how to respond to a situation like Rwanda in light of the view by some states that humanitarian intervention is "an unacceptable assault on sovereignty" (Canada). The report spelled out the concept that each state has a responsibility to protect its own citizens from "mass murder and rape" and "starvation", and that when it is not willing or not able to do so, other states must take on this responsibility (Ibid). Intervening nations are called to prevent, react and rebuild in these situations with prevention viewed as the most important part (Ibid). The report notes further, "the primary intention [of R2P]…must be to halt or avert human suffering" (Ibid). R2P, like International Humanitarian Law, adds to the framework for HROs to work within to protect activists and other vulnerable populations on the ground in conflict zones.

A recent history of technology for monitoring human rights in conflict zones

Human rights defenders have historically used technology to monitor human rights in conflict zones and influence governments to protect those rights from the use of the printing press by dissidents in the 1940s to use of more modern technology by activists today (Tuckerwood). HURIDOCS, "an international NGO helping human rights organizations use information technologies and documentation methods to maximize the impact of their advocacy

work” ("Who Are We?") was a key organizer of the use of more modern technology by HROs starting in 1979. HURIDOCS’s founding president had been the first Secretary-General of Amnesty International and was inspired by a group of human rights organizations, who saw the need for NGOs to “familiarize themselves” with the information communication technologies that were being used by “commercial companies and government agencies” ("Our History"). The organization wanted to develop mechanisms to help HROs better use the new technology at hand (Ibid). At the next HURIDOCS conference in Rome in 1986, the goals of the organization included raising “the level of knowledge of the participants with regard to the possibilities and limitations of present day information and communication technology” and coming up with ways to deal with the “threats and potential” of information communication technologies (Knabe). Certain issues brought up at the conference still apply today, such as the importance of decreasing duplication of activities, the idea that “the quality of [human rights] information has to remain or become more important than the quantity”, and the notion that technology must be designed to meet the needs of HROs (Ibid).

One of the main technologies developed by HURIDOCS was an International Human Rights Information and Documentation System (called HURIDOCS) “to promote and protect human rights through the wider dissemination of public information about human rights” ("Our History"). The idea of a database, ideated in 1981, would be to gather public information about human rights and and give access to all of this information to every user (*HURIDOCS Inaugural Conference*). Later, in 1991, the organization began to look bringing the database on line and make it public ("Human Rights On-Line" 1-17). Users would have up-do-date and current access to “the full text of international documents”, “literature references and directories, etc.” (Thoolen).

Records from HURIDOCS conferences also reveal the progression of other technology being developed and used by HROs. The 1986 conference report included conversations about microcomputer based networks, software, electronic mail systems, and “local communication

systems, such as community radio" (Knabe). The need for NGOs to become more involved in the discussion of the use of remote sensing was also addressed (Ibid). In addition, issues around the advancement of technology were touched on, such as the potential for technology to become "a major tool for action and coordination" between NGOs as well as the danger that "governments can demand access to the NGO computer files" (Ibid). Later, the 1998 Tunisia conference addressed the need for technology to organize and analyze large amounts of data, discussed the power of the Internet for affecting change, and considered the need for training affected populations on the ground how to use new technology (*HURIDOCS International Conference on Human Rights Information, Impunity and Challenges of the Post-Conflict Healing Process*) Finally, at the most recent HURIDOCS conference in 2009, discussions centered around the use of modern technology like collaborative websites, satellite technology, crowdsourcing, video technology, and the semantic web for use by NGOs (Grange).

Theoretical Framework

The preceding background provides the foundation for this MSGA thesis. Research was conducted with several points of view in mind. The theory of Instrumentalism, which regards technology as a means for shifting a group's situation rather than being the shifter of the situation (Tuckerwood), guided the collection of research. Just as the printing press was utilized by activists earlier in the 20th century, new technology is being used by activists today to create change (Ibid). Likewise, this MSGA thesis does not attempt to analyze how technology affects its users or their societies. Rather the thesis assesses how useful technology is and how it may be improved to monitor human rights in conflict zones.

Second, this thesis draws on the ethical cosmopolitan aspect of normative theory that each citizen of the world is equal (Smith, Dunne, and Kurki 42), as well as the view of the English School that “sovereignty norms” must be adjusted to allow for intervention when necessary to protect individuals (Ibid 142). The thinking is that vulnerable people deserve human security, regardless of the borders they live within be they “political, cultural affective, national, religious” or “ideological” (Ibid 42). These theories guided the process for exhibiting ways in which technology is being used and is still needed to monitor human rights in conflict zones.

It is also important to specify the narrow definition of human security, which this thesis views as the ultimate goal for researching effective current technology and needed future technology. The Human Security Report Project describes the basic meaning of Human Security as “freedom from violence and from the fear of violence” ("Human Security Backgrounder"). This thesis explores the idea that “‘ordinary people’”, as considered by Mazzucelli, may become the main defenders of these freedoms (Mazzucelli). It is in this light that the technology discussed in this research is used to help individuals and entities outside of state governments who are working to protect human security among the vulnerable.

Finally, the current era of globalization brings new ways of looking at social relationships in the global civil society, including those of “activity, interaction and power” (Smith, Dunne, and Kurki 296). This may enable actors outside of state governments to have a greater influence on what happens to activists and other vulnerable people in conflict zones. In tandem with the justification provided by evolving norms, such as International Humanitarian Law (Ibid 146) and R2P, this trend could aid the emergence of a new source of novel intervention for providing human security in conflict zones. The evolution in human security may likely be created by the convergence of those who evidence social concern for the vulnerable together with innovators of technology.

Literature Review

Overview

This literature review will cover literary works on the topic of technology for monitoring human rights in conflict zones, including scholarly and journal articles, news reports and magazine articles, government documents (including that of state, regional and international government organizations), websites, conference reports, and NGO publications. As opposed to an overview of this topic, the scholarly works focused more specifically on things like the use of crowdsourcing in crises, the use of social media for revolutions (often in the context of the Arab spring), the use of new ICTs in oppressive states, and the affect of remote sensing on human rights litigation. While these works were helpful and included in this review, they mainly focused on individual categories of technology, and none of them addressed all categories of technology. Other bodies of work, including government and NGO publications encompassed more of an overview of the use of technology for monitoring human rights in conflict zones, as well as an overview of future technology still needed for this effort.

All of the reviewed works focused on either current technology, still needed future technology or methods for using these technologies for monitoring human rights in conflict zones. Some focused on all three. This thesis will present the most common types of technologies being used currently (indicating those that are most useful) and the benefits and challenges of each. Then, the future trajectory of technology for monitoring human rights in conflict zones from the literature will be discussed. The latter will include the direction of current technologies, new technologies being developed and issues users will face. Ultimately, the goal was to find out what technology is most useful now and what technology is still needed for monitoring human rights in conflict zones.

Information Communication Technologies

Information Communication Technologies (ICTs) are described in a 2012 report commissioned by the World Bank Institute as "'technologies used in the conveying, manipulation and storage of data by electronic means'" and include technologies such as television, radio, mobile phones, and the Internet (Land et al. 3). The report points out that newer forms of ICTs such as internet and mobile phones have provided superior benefits such as "'speed, cost, scope, and interactivity'" over the other forms of technology (Ibid). While television was not mentioned once in my research as a useful tool for monitoring human rights in conflict zones, in some parts of the world radio is still a very important way to reach local communities that are not as connected as others.

Radio is still important for communicating with those on the ground in underdeveloped areas such as certain parts of Africa. Close to 86 percent of South Sudan's population, for example, listens to radio every day (Mosher). In the DRC, it is common for villagers to gather around a radio to listen to community programming and then discuss topics of interest (Livingston 23). It is a way to get information that locals trust, with content that is relevant to them (Ibid). It is also a tool for exposing the government to local thought and opinion (Ibid).

Radio also has some negative aspects. Those working in radio in places like the DRC are confronted with issues of underdevelopment. Stations are often located in substandard buildings with inadequate equipment, and their workers are poorly paid (Ibid 26). Further, remote stations are vulnerable to attack by rebels who often ransack or seize them for their purposes (Ibid). Because of these challenges, radio may not always be the best form of technology for reaching those in unconnected areas.

Mobile phones are also becoming a popular communication tool in less developed areas. A June 2013 report by Regional Business News showed that the number of mobile

phone subscribers in Africa jumped from 54 million to 650 million in the past 10 years ("Mobile Phone Usage In Africa May Actually Worsen Violent Conflicts"). Another report stated that there were an estimated 2.2 billion mobile phones in the developing world by 2009 (Wenker 14). A 2012 World Bank report laid out some benefits of mobile phones: 1) they are able to be carried by the user anywhere they are, so they are good for collecting information on the ground; 2) they can be geo-located, giving advocacy groups knowledge of where an event is occurring; 3) the built-in camera and video feature in many mobile phones can record live events; 4) the text message function allows for quicker sharing of information (Land et al.). Mobile phones have also been used for conflict prevention through local early warning systems (Robertson and Olson 5) and for challenging repressive governments such as the oppositionists' defeat of Suharto in 1998 and in the 2005 Tulip Revolution in Kyrgyzstan (Meier 2-3).

In addition, the use of mobile phones to monitor human rights in conflict zones has been well documented. A prominent example is the capture the beating of the "blue bra" girl by Egyptian security forces, a famous video of the Egyptian revolution that became a symbol of repression (Hansen 35-36). Further, when internet services were cut off in Egypt, cell phone services were left on, which were used to report messages to Google and Twitter that were translated into tweets (Wenker 88). Additionally, at the beginning of the Gaza conflict in 2009, when electricity and Internet access were spotty, mobile phone services provider, Souktel, teamed with Al Jazeera to create a "'Citizen Reporting'" service through which Palestinians could text in their views of the situation (Meier 7-8).

While useful in many ways during conflict, mobile phones also have some down sides. Coverage can be spotty and a lack of electricity for charging can be problematic (Land et al. 25). There are also serious security issues with mobile phones. For example, FrontlineSMS[1], a "free

[1] http://www.frontlinesms.com

software platform for SMS communication" that allows users to build a communication program in their regions and send and receive texts to and from large groups (Coyle and Meier 41), is not a good tool for activists in conflict zones. This is because SMS is very insecure compared to other forms of communication (Leson). The director of Women Under Siege[2], a project that includes crowd mapping sexualized violence in Syria, further warned that authoritarian governments have access to phone records (Ibid). The Information and Communication Technologies for Human Rights report also points out that a user's identity and location can be tracked by their mobile phone (Land et al. 24). An example is Syriatel, the dominant mobile services provider in Syria, which has been directed by the Syrian regime to trace its customers' conversations for the regime (United States).

Different tactics have been employed to deal with the security issues with mobile phones. Voix des Kivus, a crowd seeding program in the DRC designated certain people to use mobile phones to report on local issues ("Voix Des Kivus: A Crowd-Seeding System in DRC"), and created a way for the mobile phone users to "opt out of message distributions and to specify recipients" (Livingston). Other tactics include removing batteries from cell phones and using several or unregistered SIM cards (which cannot be traced to a specific person), avoiding putting numbers into address books, and getting rid of texts and data from calls (Ibid).

The Internet, another important ICT, has been useful in some parts of the world. While growing in popularity in the South and the East (Robertson and Olson), the Internet still remains more used in the global north. A 2011 report indicated that nearly 70% of the global population was not yet able to get on line (Lannon and Halpin, XVII). Additionally, for a variety of reasons including language barriers, lack of decent connectivity or education deficiency, the 30% that can get on line are not always able to upload personal subject matter (Ibid). Despite this, the

[2] http://www.womenundersiegeproject.org

Internet has played a large role in contemporary conflicts in certain parts of the world. As described in the book, *Human Rights and Information Communication Technologies: Trends and Consequences of Use*, the power of the Internet in the human rights space is "reflected in the number of bloggers arrested around the world for exposing corruption or human rights violations…" (Lannon and Halpin, XVIII). Further, the Internet allows for reports of information in a specific location to be viewed by anyone connected around the world, informing those outside of the situation about what is happening on the ground (Laverty).

A part of the world where Internet usage has grown significantly is the Middle East, where the number of those online grew by 13 times between 2000 and 2008 (Dayem). This trend, combined with the prohibitory laws for conventional media has driven concerned citizens online to express their contention of government repression and report incidents of human rights abuses (Ibid). The Internet has given users who were unable to express themselves publicly before, a way to do so (Mohamed 35). Interestingly, two-thirds of those online worldwide "are under the age of 35, and 40% are under the age of 25" according to a 2013 report. These statistics, combined with the report's claim that 60% of those new to the web are in countries that are either "failed" or "at risk of fragility" (Robertson and Olson) points to a large percentage of new users being younger and living in conflict zones.

An important type of technology accessible via the Internet and used in monitoring human rights in conflict zones is social media. As defined by Tufts University, social media is "…a set of tools that foster interaction, discussion and community, allowing people to build relationships and share information ("Social Media Overview"). People often associate social media with sites like Facebook, Twitter, YouTube, Flickr, and Wikipedia (Wenker 6-7). While social media is still less used in the developing world, in connected areas it has been an important tool for monitoring human rights. In addition to using social media to report and describe events, people on the ground also share and reiterate opinions about issues on social

media (Shirky) (Meier 6). This aspect of social media and others will be discussed in more detail later in the literature review.

Open source tools such as crowdsourcing and crowd mapping platforms are also accessible on the Internet. Ushahidi is a well-known crisis mapping platform that has been used for monitoring human rights in conflict zones. The platforms builds the data of many by organizing "micro-contributions from the Web, SMS, Twitter, Flickr and other ICTs" into a viewable map on the Web to present a larger picture of the situation to the public (Ibid). Examples of Ushahidi maps being used to monitor the situation in Syria are Syria Tracker[3] and Women Under Siege[4]. The use of crisis mapping and other open source tools for monitoring human rights in conflict zones will also be discussed in more detail later in the thesis.

Like radio and mobile phones, the Internet can be used constructively as well as destructively. Authoritarian states can use the Internet to create false perceptions through fake social media accounts that favor the government or make opposition movements appear "undemocratic" (Meier 75). Authoritarian governments may also sever connectivity entirely if threatened, similar to Mubarak's shut down of the Internet in the beginning of 2011 (Ibid 3) or the Syrian regime's routine shutdown of connectivity throughout the civil war there (Nordland).

Interesting to note, several activists have pointed out weaknesses in state tactics of using the Internet to suppress the opposition. Wael Ghonim, well-known Egyptian activist, maintains that when Mubarak shut down the Internet during the 2011 protests, it only served to invigorate the public by creating the impression that the government was scared of the opposition movement. Further, it brought people to the streets who were seeking information (Wenker 69). Assad's Internet shut down has resulted in the creation of citizen journalists

[3] https://syriatracker.crowdmap.com
[4] http://www.womenundersiegeproject.org

(Nordland). Additionally, Sri Lankan and special advisor to the ICT4Peace Foundation[5], Sanjana Hattotuwa, asserts that information is permanent; shutting down a site will not make the truth go away as it "will always find a way out" (Robertson and Olson 29).

Social Media

As mentioned earlier, social media is an important tool for monitoring human rights. Sites like Wikipedia, Friendster and LinkedIn came on the scene in the early 2000s (Bennett). In more recent years, certain sites like Facebook, Twitter, Flickr, and YouTube have dominated the social media space pertaining to monitoring human rights. This is underlined by the amount of unique users on Facebook, the most used social networking site in the world, which increased 153% from 2007 to 2008, and jumped another 157% by 2009 (Coyle and Meier 6). The number of Twitterers also grew globally by 67% in April 2009 (Ibid).

Social media tools are being used to organize protests, make governments accountable, and show human rights violations (Wenker 2). For example, they have been widely used in the Arab Spring. As a Cairo activist stated, "we use Facebook to schedule our protests, Twitter to coordinate, and YouTube to tell the world" (Robertson and Olson 27). Moreno-Ocampo, ICC Prosecutor, attributed social media as a big part of the ICC's reasoning for responding to the situation in Libya (Meier 9). Tunisia has been called a Facebook revolution, where Facebook was used by the youth to rise up against Ben Ali (Cohen). Further, an activist in Egypt disseminating YouTube videos of the embattled Syrian city of Homs called the war in Syria "the first YouTube war", where an estimated 80% of video footage broadcast on news channels like the BBC and Al Jazeera have come from amateur video journalists (Nordland).

[5] http://ict4peace.org

Blogging (also a form of social media) is another way dissidents are expressing themselves online. In the Middle East, blogging has become increasingly more popular. 35,000 Arabic blogs were routinely updated in 2009 (Dayem). Bloggers have been able to stretch the boundaries of traditional journalism and are often able to lead the way in reporting on sensitive issues since their viewership is usually more tolerant (Dayem). Blogs have provided significant content for mainstream media outlets (Mohamed 248). In Egypt, blogging was an important way to express opposition in the Mubarak led state (Ibid 62). The trend has further inspired a "new generation of political activists, especially those who are oriented towards journalism and literature" (Ibid 152).

One challenge that social media presents is the difficulty of sorting out important information from the noise (Starbird 5). Content may be "mistaken, wrong, exaggerated, or even intentionally misleading or distorted" (Land et al. 21). For example, the Syrian regime has used Twitter to spread information that is false (Ibid). Information may also be taken out of context (Starbird 5). Pieces of information can be left out when originally posted (Ibid) or information can be remixed with other content and re-disseminated (Land et al. 21-22).

In addition to misinformation, social media has grave security issues. Quick dissemination of content makes it difficult to protect those exposed in the content, and repressive governments can use that content to identify participants of demonstrations or protests (Ibid 23). This technique has been used both by the Iranian and Burmese governments during resistance movements in their respective countries (Ibid) and is also a tactic of the Syrian regime (Wenker 66-67). Moreover, governments can use social media to decipher other information about the opposition, like how dissident groups are formed (Ibid 66). Finally, it is debated whether showing reports of abuses online may have a negative effect on violent conflict as they may fan the flames of violence by angering those who see them ("Interview - SecDev Group").

Open Source Tools

The building of open source software has stemmed from the principle that anyone should be able to make things that inspire them (Lichtenberg). Just as social media is fed by media content, open source software is fed by code content (Ibid). Firefox, the Android phone and Google Docs are all open source (Ibid). The growing popularity of open source software is demonstrated in the joint initiative by the University of Geneva, Citizen Cyberspace Center[6], and CERN[7], called Crowdcrafting. ("New Online Technologies Can Unleash the Power of Crowds for Science and Emergencies"). Crowdcrafting is an open source platform for "professional scientists as well as amateurs to design and launch their own online citizen projects", encouraging the development of technology to evidence social concern in the cosmopolitan tradition (Ibid).

An important tool built on open source software in terms of monitoring human rights in conflict zones is crisis mapping. Crisis mapping is a way to give the international humanitarian community a big picture of a crisis, while getting out individual stories of the affected population in the crisis (Ziemke). As noted by Patrick Meier, it can "counter official state propaganda" by "changing the state's narrative" to that of the local population (Meier 10, 206). As mentioned earlier, Kenyan founded Ushahidi[8] has been a leader in this type of technology. Since its creation during the 2008 post election violence in Kenya, over 50,000 Ushahidi maps have been built in over 150 countries and translated into more than 40 languages (Oduor). The platform builds on the data of many by organizing "micro-contributions from the Web, SMS, Twitter, Flickr and other ICTs" into a viewable map, creating a visual presentation of the overall situation to the

[6] http://www.citizencyberscience.net
[7] http://home.web.cern.ch
[8] http://ushahidi.com

public in real time (Meier 48, 176) (Coyle and Meier 20). Since it is open source, the Ushahidi platform can be adapted depending on its use. For example, Egyptian developers translated their 2010 parliamentary election-monitoring map into Arabic and added a feature to transfer Facebook messages to the map. Facebook is a popular way for Egyptian youth to share opinions (Ibid 166).

In addition, the Standby Task Force (SBTF)[9] formed in 2010 (Starbird 52-53), works to give "live mapping support" to crisis responders and had over 800 volunteers around the globe by the end of 2011 (Meier 1246-1247). The group is "on call" to help when crises happen and worked with UNOCHA during the conflict in Libya. SBTF has also worked with UNHCR, WHO, Amnesty International USA and others during numerous crises (Ibid). The SBTF uses the Ushahidi platform (Ibid). The SBTF can be activated if 1. The requesting group has shown the need for the SBTF; 2. It has the presence on the ground; and 3. It has the means to carry out an intervention among other things ("Activation Criteria").

Crisis mapping, like social media, comes with challenges of the organization and verification of information. So called "virtual and technical communities", volunteers who work with digital media, help to gather, screen, and organize data for crisis mapping (Starbird 7). Also, Humanity Road[10] works to organize data during crises is with a mission to "collect, verify and route information online" (Starbird 52) ("About Us"). Though Humanity Road is focused on natural disasters, their mission is to train volunteers in techniques that prioritize information to contribute to "existing resources" or to create new tools for use by those on the ground (Starbird 52). These could also be helpful in terms of monitoring human rights in conflict zones.

Additionally, crisis mapping comes with several other challenges, including the problem of misinformation. Crisis maps in Sudan, Egypt, and Russia, for example, not only show content

[9] http://standbytaskforce.wordpress.com
[10] http://www.humanityroad.org

of local citizens, but also state propaganda (Meier 1260). Misinformation campaigns can be identified by locals some of the time, but not all of the time (Ibid). Further, the identification and abuse of those providing content as well as those in the content is a grave security concern. To address these issues, UNOCHA used password protection to secure their map of the Libyan conflict and only trusted sources were given access (Meier 1254). They further delayed posting information to the map for 24 hours and deleted any details that could lead to the abuse of content providers before publishing a public version of the map, replacing them with title and category names (Ibid). Women Under Siege Syria also has instructions on its site, in English and Arabic, for how to submit a report. Technology to use to submit a report and precautions such as using a provided secure email address to upload information to the map, uploading security software and deleting browser history are covered ("Digital Security and Submissions").

Geospatial Technology

Another type of technology that has been used more and more over the past decade is geospatial technology. The National Science Foundation defines it as "equipment used in visualization, measurement, and analysis of earth's features, typically involving such systems as GPS (global positioning systems), GIS (geographical information systems), and RS (remote sensing)" (Cimons). GPS locates an object on the earth's surface "using triangulation from a system of earth-orbiting satellites", GIS is a way to create maps from "multiple complex layers of geo-referenced (have a spatial location) data…", and remote sensing is the collection of information about the earth's surface by airplane or satellites orbiting the earth (Wolfinbarger). U.S. laws restricting commercial satellite usage changed in the mid 90s, resulting in several firms launching satellites in the late 1990s/early 2000s (United States). By 2008 the satellites

could see details such as “small houses, fencing, footpaths, crop types, and vehicles” ("Geospatial Technology: Mapping For Human Rights").

Geospatial technology is also being used more and more by HROs for monitoring human rights in conflict zones. Remote Sensing technology can cut through clouds and “some vegetation” and can show important information such as when communities and structures have been destroyed, as well as mass graves and obscure detention centers (Edwards). Remote sensing can also be used to study patterns of conflicts and can be collaborated with reports from the ground to corroborate evidence (Coyle and Meier).

In 2006, the American Association for the Advancement of Science (AAAS)[11] began using geospatial technology as part of its Scientific Responsibility, Human Rights and Law Program, conducting a several-year study of the use of technology for human rights ("AAAS - Geospatial Technologies and Human Rights"). They have since worked with NGOs such as Human Rights Watch, Amnesty International, and the Indian Law Resource Center in places including “Zimbabwe, Lebanon, Sudan, Chad, Burma, Nepal, Somalia, Ethiopia, and Georgia” (Bromley 166). The technology can document details in places with little or no NGO access. For example, in 2006 the AAAS used remote sensing satellite images to help show that the Zimbabwean community of Porta Form was wiped out by state forces in an effort to diminish political opposition (Livingston). The AAAS also worked to show evidence of human rights abuses in Darfur, such as the attack on the village of Jonjona in 2006 where 60 houses were burned (Sulik and Edwards 2525-2526).

More recently, in August 2012, the AAAS worked with Amnesty International, USA to look into a situation in Aleppo, Syria, where there had been many reports of human rights abuses ("Satellite Imagery Analysis for Urban Conflict Documentation: Aleppo, Syria"). Satellite

[11] http://www.aaas.org

images were taken on August 9th and 23rd, to cover incidents of destruction by the regime reported within those dates (Ibid). The images picked up the army vehicles in the streets, buildings destroyed, and roadblocks raised around Aleppo, supporting the reports (Ibid). The evidence was enough to conclude that city had been under siege (Ibid).

Along with providing evidence, geospatial technology can and is being used in courts of law around the world successfully (Wolfinbarger 60-61). For example the AAAS has been asked by human rights courts to provide analysis of remote sensing images regarding conflicts in South Ossetia, Zimbabwe and Darfur (Ibid). The evidence is useful to back up claims of people on the ground, which can add to the validity of the allegations (Ibid 60, 139). While there is no clear protocol yet for the use of geospatial technology in a court of law, these initial cases can provide learning opportunities for judges to use it more effectively in the future (Ibid 50, 53).

Geospatial technology has several shortcomings. First, it cannot be used for proof unquestionably or in isolation, as was pointed out when Secretary of State Colin Powell used now well-disputed satellite evidence for invading Iraq (Edwards and Koettl 71) (Ensor). The analysis of remote sensing must be truly questioned since it can apply to some situations and not to others, the context of the evidence can differ from one case to another, and the evidence can be interpreted in varying ways by different people to "serve particular agendas and purposes" (Wolfinbarger 6, 13, 25). Further, Lars Bromley, former Director of the Geospatial Technologies and Human Rights Project of the AAAS explains that while monitoring remote regions from the sky, it can be difficult to get accurate coordinates of the locations of possible abuses, so working with agencies like Sudan Interagency Mapping, which keeps a database of Darfur settlements, becomes really important (Bromley 164).

Further, geospatial information, while good for showing images from a distance, cannot provide local knowledge or the context of the images, including information and stories of the lives of those who live in the areas where the images were taken (Wolfinbarger 27, 31). It also

lacks clarity on the severity of situations or the types of abuses committed to affected populations (Edwards). Therefore, as with crisis mapping, geospatial technology must be combined with qualitative information from the ground and other evidence to be effective.

The future of technology for monitoring human rights in conflict zones

In their book, "Human Rights and Information Communication Technologies: Trends and Consequences of Use", John Lannon and Edward F. Halpin outline several "technology issues" that HROs are facing regarding their future use of ICTs (1). Two that are particularly relevant for monitoring human rights in conflict zones are, in my assessment, issues of security and data organization (Ibid). From my research, it is further necessary to add matters of verification, access, connectivity, ethics, and the fact that technology can be used constructively and destructively. These issues and technology being developed to address those issues are discussed in the next section.

Security

A variety of issues come up in terms of security that will need to be addressed regarding technology for monitoring human rights in conflict zones. One issue is protecting those who report human rights violations as well as the information they are reporting (Land et al. 23-24). As authoritarian governments are becoming better at monitoring online users and content (Meier and Leaning), tactics have been employed to work around this like removing "identifying information" in advance of publicizing content, presenting information in a "code" so only those who own the data can understand its meaning or housing data in more secure and remote servers (Ibid 24).

Organizations are also working at other ways to address security issues faced by activists like providing digital security tools and guides for using these tools. The Tactical Technology Collective[12] is an organization that works to help activists "understand and manage their digital security and privacy risks" by providing software and training tools (*Tactical Technology Collective*). Security In A Box[13], a joint project of the Tactical Technology Collective and Front Line Defenders[14] (another security-focused organization), provides a list of security tools and guides for using them on their site (Ibid). The tools include Eraser[15], to securely remove data from your device, TrueCrypt[16], to store data securely, RiseUp[17], to email securely, and many more (Ibid). Other software programs that provide security online are Guardster[18], Hide My Ass![19], and Proxify[20]. Each of these offers services that allow users to anonymously surf the web while protecting their identity, along with other security services. While some of the above tools have been around for a while, they remain tools upon which to build future technology security.

Syrian activist and IT engineer, Dlshad Othman, has also been working on developing new security tools. Over the past year he has been working on a project called Virtus Linux 2.0, a more robust version of the Virtus Linux, which earned him a prize from the Freedom House Incubator Project in 2012 ("Interview with Dlshad Othman"). The technology, built on Linux open source software, is a live operating system that does not have to be downloaded onto a device for use and when removed leaves no trace of information on the device ("Freedom House IGF

[12] https://www.tacticaltech.org
[13] https://securityinabox.org
[14] http://www.frontlinedefenders.org
[15] http://eraser.heidi.ie
[16] http://www.truecrypt.org
[17] https://riseup.net
[18] http://www.guardster.com
[19] http://www.hidemyass.com
[20] http://proxify.com

Incubator Project"). It also provides a secure web browser, encryption tools, private VPN access, and tools for documenting human rights abuses like video and photo editing tools (Ibid). Othman also wants to make the Virtus Linux 2.0 accessible via mobile phones ("Interview with Dlshad Othman").

Also significant regarding security technology are the winners of the Tech Challenge for Atrocity Prevention[21], a joint project of USAID and Humanity United[22]. One of the challenges of the competition was to "identify groundbreaking technological solutions that would enable better and more secure communications among communities in conflicted areas" (Ibid). The first place winner of this challenge was the Serval Project[23], software that allows smartphones to continue to operate amidst catastrophic situations while enabling secure communication encrypting calls and texts (*The Serval Project*). The developers are currently working to raise funds to build this technology (Ibid). New technology ideas like the Serval Project and Virtus Linux 2.0 are being developed to meet the challenge of security while monitoring human rights in conflict zones.

Data Organization

With all of the reports of human rights abuses through the various channels of ICTs, social media, open source platforms and mainstream media, it is getting harder and harder to sift through all of it to get to the relevant and important parts. The massive amount of information is demonstrated in Facebook's March 2012 declaration that it had 901 million current members producing billions of content pieces (Starbird 13). In addition to the difficulty of sorting through

[21] http://www.thetechchallenge.org
[22] http://www.humanityunited.org
[23] http://www.servalproject.org

the high volume of content, there can also be the problems of lost context and disinformation (Ibid 5).

Several recent scholarly projects have attempted to solve these problems by linking the communication from those affected to certain meanings. One project looked at the use of linked data to address the needs of those affected as well as organizations working to help them by using a type of web semantics ("Management of a Crisis (MOAC) Vocabulary Specification") to organize the information (Limbu v). The proposed system connects data to documents using the technology of the World Wide Web Consortium ("RDF") (Limbu 31).

Another project looked at the potential of processing social media information into “usable information” that focuses on the responding crowd “as an asset in the effort” (Starbird iii). The project provides a way for Tweeters to organize their Tweets that would enable them to be read and analyzed by a machine (Starbird 68). Both of these projects could potentially contribute to the advancement of technology for data organization in the future.

Crowd seeding is another strategy that some are using to focus in on relevant content from affected areas. It works by designating trusted people in a representative sample who can speak for their community to report on situations (Land et al.). The benefits of this strategy are that it can garner input from those that would not normally participate in crowdsourcing as well as those who would, allowing information to come from a random sample of affected people (Ibid). Uchaguzi has utilized crowd seeding as part of their work in monitoring elections (Ibid). Crowd seeding has potential for helping to narrow down the vast amount of information being reported.

Medic Mobile, a tech company working to advance health care in difficult environments is developing other technologies for organizing information ("About Us | Medic Mobile"). The organization is working on a way to “‘auto-categorize messages sent from healthcare workers in the field’” in order to identify indications of outbreaks or areas of high risk of disease from a

variety of languages ((Land et al. 27). While this technology is being developed for use by healthcare workers, it also has potential to be adapted for human rights defenders working in conflict zones.

Other companies and organizations developing technology to find and sift through large amounts of data are GeoFeedia, Social Eyez, Datasift, and the EU's Joint Research Centre. Geofeedia[24] is a service that allows you to monitor social media, narrow down your found content by "keyword, timeframe, social media type, author" and others, see it mapped out, find trends, and store the information ("How It Works"). Social Eyez[25] "identifies, monitors, and analyzes" social media in all languages, including Arabic and Persian and focuses on the Middle East ("Who Are We?"). A subsidiary of News Group, Social Eyez, also analyzes content from other media channels (Ibid). Datasift[26] offers filtering and analysis services for social, news, retail, financial, and political fields ("Industries"). Finally, in its efforts toward "global security and crisis management" the EU's Joint Research Center has a program called OPTIMA which uses Language Technology to find key information on the Web, across over languages, including location of information, topic mining, opinion analysis, and among many other capabilities ("At a Glance") (Coyle and Meier 21).

In addition, the idea of leadership combined with technology has potential for filtering out important information from all the noise. Micah Clark of the SecDev Group predicts that collaborative information of the future will go from being crowd-based from a big crowd to crowd-based from a smaller crowd (Clark). In his opinion, big data is not the future; in fact "small and medium" data is since big data creates so much noise and loses the human element in the process (Ibid). He points out the importance of leadership and how a large percentage of

[24] http://corp.geofeedia.com
[25] http://www.social-eyez.com
[26] http://datasift.com

important content comes from a small percentage of people. Clark believes this can also apply to social media (Ibid). This parallels with the idea of peer verification, which is a crowd-based review of information (Lannon and Halpin 133). Slashdot[27], an online news aggregator, is a model of peer verification that automatically chooses leaders for discussions based on positive reviews by peers. These leaders can also be demoted based on negative reviews (Ibid).

Verification

A main goal of HROs in monitoring human rights in conflict zones is to get those in power, such as individual governments or intergovernmental organizations, to act (Wolfinbarger 21). It is important for information collected by HROs to be correct since accurate information "provides the 'currency' for enforcement efforts" (Land et al. 21). Further, evidence needs to be "objective, replicable and well-documented" to be effective (Wolfinbarger 21), and it must resist refutation by the perpetrators of abuse (Land et al. 21). The strategies and technologies assessed below are being used and developed to provide better verification of data.

Several strategies have been employed recently in conjunction with technology in terms of verification. The Standby Task Force's verification division maps as much data as they can. If the data is significant but not yet verified, they clearly mark it as unverified information (Meier 1254). Uchaguzi has also used this technique, choosing to let the public go through information and form opinions about the veracity of its posted reports that are unverified (Land et al. 23). In a 2011 presentation on crisis mapping, Rogue Genius[28] suggested that crisis mappers first look only at valid news sources, excluding social media sources, then compare those sources with

[27] http://slashdot.org
[28] http://roguegenius.com

the social media reports (Chamales). Finally, another strategy is to verify details relevant to the time and date of a report such as “weather reports, landmarks, and shadows” (Land et al. 173).

Technology is also being developed to meet the challenge of verification. Still in testing, Swift River is an open source data organization and verification tool being developed by Ushahidi. Swift River “combs and cross-checks events reported via email, Twitter, SMS, smartphone app, online news, blogs, Facebook, Flicker and soon YouTube to generate veracity scores” on the reliability of the content (Lannon and Halpin 134). Swift River ultimately aims to show the odds that a multiple reported incident through different media channels really took place (Ibid).

InformaCam[29], a joint project of Witness and the Guardian Project, is an app that works to authenticate citizen videos and photos (Witness, Guardian Project, Knight Foundation). It uses smartphone sensors to “mark” the footage taken with the details of the setting where the event took place, including the “current GPS coordinates, altitude, compass bearing, light meter readings, Wi-Fi networks, and others” ("InformaCam: Verified Mobile Media"). InformaCam also verifies the exact device used to capture the footage (Ibid). The technology works on the Android and is still in testing (Ibid) with potential to be a groundbreaking tool for human rights monitoring.

Concepts such as P.A.C.T.[30], MediCapt[31], and International Evidence Locker[32] are more technology ideas that gained international attention in the 2013 Tech Challenge for Atrocity Prevention. P.A.C.T. is a customizable platform that provides low-cost communication technologies, including UAVs, Internet Balloons and others that would establish connectivity in

[29] https://guardianproject.info/apps/informacam/
[30] http://www.openideo.com/open/usaid-humanity-united/winners-announced/pirate-communications/
[31] http://thetechchallenge.org/winners/capture.html
[32] http://thetechchallenge.org/winners/capture.html

regions with little or no connectivity and organizes the information submitted through those devices using P.A.C.T. software ("Meet the Tech Challenge Winners Alert"). MediCapt is a mobile app that gives medical workers tools for “collecting, documenting and preserving court-admissible forensic evidence of mass atrocities including sexual violence and torture” and then securely sends it to authorities ("Meet the Tech Challenge Winners Capture"). Finally, International Evidence Locker is a mobile app that enables users to record an incident, “encrypt it, and send it instantaneously to a secure drop-box at a human rights organization for evidence storage”, thus maintaining the chain of custody of the evidence making it more usable in court (Ibid).

Access

A major obstacle for getting an accurate assessment of what is happening on the ground in conflict zones is limited access. Whether a result of the dangers of war or restricting governments, barriers to access make it difficult for human rights defenders to collect evidence of violations and easier for abusers to have impunity (Edwards and Koettl 66). Complex conflicts with multiple actors and little or no communication technology also contribute to limited access (Ibid 67). It can be challenging to collect evidence in these areas while maintaining the security of those on the ground (Meier and Leaning 13).

Geospatial technology, while used by HROS for nearly a decade, remains an important future technology for monitoring human rights in conflict zones, especially regarding gaining access to inaccessible places. The continued work of UNOSAT[33] (UNITAR’s Operational Satellite Applications Programme) (as well as continued use by NGOs) underlines the

[33] http://www.unitar.org/unosat/

importance of this trajectory. UNOSAT's July 2013 report on the refugee situation in war torn Somalia from its repeated satellite analyses since 2011 shows large IDP movement in Mogadishu ("UNOSAT Releases New Satellite Analysis of Displaced People in Mogadishu"). Further, UNOSATs work in monitoring the refugee situation in Syria has highlighted the continued growth of refugee camps outside of Syria, in order to help UNHCR and other NGOs respond to this growth more effectively. UNOSAT also shows locations of IDPs within Syria that are too dangerous to access ("UNOSAT Maps Underscore UNHCR Warning over Syria"). These kinds of analyses of inaccessible situations are being used to inform powerful bodies such as the UN Security Council (Ibid).

While Unmanned Aerial Vehicles (UAVs) or 'drones' have been used as weapons (Obama has authorized 300 drone strikes in Pakistan alone) (Toby) or spying machines (the UE uses them to spy on Europe's farms) (Peter), they have great potential for use by HROs as well. Having the benefit of costing much less than satellite technology, they also have the ability to create higher resolution images and can maneuver under the clouds (Coyle and Meier 41). Images from UAVs could provide better evidence for use in court (Sniderman and Hanis). Further, the ease of drone regulations will likely make them more accessible to HROs. In the U.S., for example, the government is starting to clear UAV use for civilians (Szondy).

Another cutting edge technology is being developed to help civilians on the ground in dangerous and inaccessible areas of conflict. Dlshad Othman, in addition to his other projects, has also been developing Aymta[34] (Arabic for "when"), an early warning system to Syrians of regime launched scud missiles (Efron). Scud missiles have had devastating effects on Syrian civilians, including one attack in Aleppo in February 2013 that killed 141 people, almost half of whom were children (Ibid). Aymta uses information from trusted spotters on the ground,

[34] https://www.aymta.com

calculates the scud's "trajectory" and anticipated arrival, and alerts users via text, email, RSS feed, or satellite TV or radio in case of blocked Internet access (Ibid). Othman also plans to broaden Aymta's usage to warn of other threats like the approach of armed vehicles and troops and for use in other countries (Ibid).

Connectivity

What some have called the "digital divide", the gap between those with advanced technology and those without, brings with it the issue of connecting to those who do not have advanced technology when monitoring human rights in conflict zones (Robertson and Olson 45). While some believe that the rapid advancement of technology will eventually diminish this gap (Ibid), communication with people in hard to reach areas remains an issue for the foreseeable future. Following are some ways that technology is being developed to try to meet this challenge.

To address the lacking connectivity in parts of Africa, Ushahidi is producing a mechanism called the BRCK, which provides an Internet connection in any part of the world ("BRCK"). The BRCK can aptly switch between different networks. It can automatically make use of eight hours of battery back up if necessary. The BRCK is usable from anywhere as it functions in the Cloud (Ibid). It is small and can wire "up to 20 devices with a Wi-Fi signal that can cover several rooms" (Kosner). The BRCK is in line with Ushahidi's goal of advancing "'the way information flows in the world'" (Ibid). While the BRCK comes with the security issue of being traceable, it seems a step in the right direction for use in conflict zones with little or no connectivity.

The lack of electricity in parts of the developing world is also problematic. Meier and Leaning mention possible solutions to this challenge, including chargers powered by solar

panels, bicycles, and wind up mechanisms (Meier and Leaning 10). Two products that have been developed along those lines are the WakaWaka Light and the WakaWaka Power[35]. The WakaWaka Light is an inexpensive LED lamp powered by solar energy that since its launch in the summer of 2012 has been purchased in every African country and many other countries around the world ("MISSION - Waka Waka Light US"). In 2013, a version of the light with the added function of a charger for “phones and other handheld devices” was produced and called WakaWaka Power (Ibid). These technologies could prove helpful for human rights defenders in areas of conflict zones that lack electricity.

Finally, People’s Radio[36], another winner of the Tech Challenge for Atrocity Prevention, is a system where people on the ground can anonymously call a free number to a community radio channel (called the People’s Radio) and leave a short message, which is then broadcasted on the channel (Kirchhubel). Local voices would be able to be heard by community members and NGOs in situations where TV or radio is controlled by governments and when tools like social media are not available options (Ibid). The idea seems like a good one as long as the radio station can be supported outside of a state controlled infrastructure, providing a measure of security. These products and ideas are positive steps toward connecting to those in conflict zones with little or no connectivity.

Ethics

Literary works on the topic of technology for monitoring human rights in conflict zones often note the importance of remembering that it is the people on the ground who ultimately need to use this technology. Referring to the revolution in Egypt, Cheryl Hanson points out in

[35] http://us.waka-waka.com
[36] http://www.openideo.com/open/usaid-humanity-united/winners-announced/people-s-radio/

her dissertation that “social media is a tool of the revolution, but not responsible for the revolution” (Hansen 57). Meier also points out that in a crisis situation, “the first responders are by definition the crisis-effected communities” and that they are the ones doing most of the rescuing (Ibid). Further, in a recent panel discussion on Syria and R2P, Former White House Correspondent, Michael Abrawitz, pointed out that even with all the new technology being employed to monitor human rights, “you still need people on the ground” (Abramowitz, Adams, and Matthews). This extremely basic and foundational point can be forgotten when focusing on exciting new advancements in technology.

Since it is ultimately people on the ground who must face the effects of war and oppressive regimes, important ethical issues come up when considering technology to help them do this. For one, citizen journalists, while often the most valuable source of information, are not trained to understand the risks involved in their work and procedures to reduce the risks of their reporting (Land et al. 31-32). Additionally, there are the matters of protecting sources of information from non-mainstream media. With crowd sourced content, for example, it is important to try to let reporters of information know how that “information will be used and any associated risks” (Ibid 32). Citizen reporting also still lacks a standard of ethics (Ibid). This point is magnified in light of the fast pace of technology advancement (Lannon and Halpin 15).

Secondly, training people on the ground how to use new technology for monitoring human rights is very important. In a joint initiative, Tactical Tech and Front Line Defenders have a four-point process to educate human rights defenders about their “privacy and security” (Ibid 170). This includes an awareness campaign that outlines the risks involved, a “digital privacy and security toolkit”, person-to-person training sessions on the topic, and continued assistance addressing ongoing and evolving security needs (Ibid). In addition, some HROs include

instructions about submitting reports to their sites. For example, Syria Tracker[37], an organization that crowd maps human rights violations in Syria lists instructions on the site for how to submit reports securely including using a recommended secure email, installing recommended security software, and avoiding the use of SMS.

Technology can be Used Constructively or Destructively

Another important point regarding technology for monitoring human rights in conflict zones is that technology can be used positively or negatively depending on who is using the different tools and why. The phrase 'a game of cat and mouse' is often used to describe the race between those with salutary intentions and those intending to inflict harm. As technology has taken power away from leaders who prefer to control the public realm (Wenker 97), so too have those leaders tried to use technology to regain their power.

An example of this is the use of Twitter by the Syrian Electronic Army. While many human rights defenders are using Twitter to report abuses happening in Syria, the Syrian Electronic Army has been using it for very different reasons. In April 2013, the group broke into a Twitter feed of the Associated Press and reported that President Obama had been seriously wounded in a blast (Ehrenfreund). While the Washington Post quickly corrected the misinformation, the U.S. market was drastically affected in the minutes following the fake report (Ibid). The Syrian Electronic Army also attacked other sites and Twitter feeds including those of National Public Radio to counter NPR's reporting of the war in Syria, and using the "60 Minutes" account to accuse "the United States of supporting terrorism in Syria as part of a larger plot to impose a one-world government" (Ibid).

[37] https://syriatracker.crowdmap.com

Google Earth provides another example. While human rights defenders are using Google Earth to capture evidence of abuse, terrorists are using it to target those they want to attack. The Open Source Center of the U.S. Director of National Intelligence disclosed that in 2006, “Al-Qaeda linked militants in Yemen exploded four car bombs in a failed attack on oil facilities, planned with the aid of Google Earth” (United States). These examples are two of many regarding the use technology for constructive as well as destructive means.

Final Points

This literature review has provided insight into what technology is currently being used by HROs to monitor human rights in conflict zones. It has also presented issues that HROs are facing regarding the future trajectory of technology for their efforts and new technologies being developed to address these issues. The next segment of this MSGA thesis will focus on primary research conducted to gain the direct perspective of HROs working in the field concerning different technologies most useful at present and up and coming technologies still necessary to identify for their work.

Methodology

While research has been done on individual types of technology and its use by human rights defenders and affected populations in conflict zones, as well as on the latest technology for monitoring human rights in conflict zones

about what technology is useful to them and what technology is still needed for this work. Using a qualitative approach, this research aims to collect information directly from these organizations to glean a more complete picture of this topic. The representatives in the organizations interviewed for this thesis were from seven international organizations that monitor human rights in conflict zones as part of their work. They were from five HROs, one IGO, and one non-profit technology company. Two are based in New York City, and the rest are based in London, Washington D.C., Nairobi, Montreal, and international territory. Each monitors the globe for some or all of crimes of genocide, crimes against humanity, war crimes, and other violations of international humanitarian law. Six of the interviews were done using Skype, and one was conducted in person. Each interview lasted between 30 and 60 minutes and took place between June 26, 2013 and July 23, 2013.

The representatives from the organizations interviewed varied. One was entry level, one was mid-level, three were senior level, and two were executive level. Each interviewee's knowledge of technology differed but those who were not technology specialists were informed about their organization's use of technology. Some of their perspectives also differed, stemming from the type of human rights violations their organizations are monitoring, as well their organization's approach to this work. For example, while all organizations were working to monitor human rights in conflict zones, they were diverse in their focus, whether it be preventing genocide, building technology, or making sure to treat each country fairly. The variation in the approach that each of these organizations have for monitoring human rights in conflict zones, necessitates calls for technology that is adaptable to their needs.

Analysis of Findings

Current Use of Technology

The first portion of interview questions focused on finding out which current technologies the interviewees felt were more useful to their organization for monitoring human rights in conflict zones. This thesis aimed to identify existing technology that could be enhanced along with needed new technology. Several key insights were shared.

All seven organizations said that social media was useful for their work. The reasons included the use of social media for finding areas of conflict or potential conflict and building relationships with activists in those areas, for monitoring reports of incidents and violations, for capturing evidence of violations that would not have been seen prior to social media, for corroborating information from social media with other sources to verify evidence, using the information from social media to get powerful leaders to stop their abuse or for use in court, for communication between activists and HROs, and for reporting incidents to a crisis map. In addition, three interviewees specifically mentioned YouTube, two mentioned Facebook, and one mentioned blogs as useful types of social media for their work.

Geospatial technology was the next most mentioned technology being used currently by the HROs. Four interviewees mentioned it for reasons that include getting access to places that are inaccessible because they are closed or too dangerous, gathering certain types of evidence including destruction of infrastructure, forced displacement, mass graves, and looting, combining the information gathered by satellites with that of other sources to verify evidence, and to clarify what has happened during an incident and call for better access to the area of the incident. Other comments about the use of satellite technology include its advancement. One organization mentioned the ability of remote sensing to see people living in Syria on the Turkish

border “in fields and olive groves”. Another interviewee mentioned the limitations of satellite imagery in the types of information it can gather. He further noted that satellite technology must be complimented “with testimonies from on the ground”. Finally, one interviewee said that her organization would like to use satellite technology; yet the cost is prohibitive.

Mobile phones were mentioned twice as being useful current technology for monitoring human rights in conflict zones. One reason was for their use in areas with no Internet connectivity or landline infrastructure. The other reason was their utility in reporting incidents to crisis maps. Furthermore, smart phones with cameras were mentioned as a good way for researchers to gather and record evidence. Video cameras were also mentioned twice in addition to video technology (mentioned once) as useful tools for gathering and recording evidence.

Two interviewees mentioned Ushahidi as a useful tool for monitoring human rights in conflict zones. One mentioned that Ushahidi has “proved itself as a very useful crowd mapping tool”. The other noted that Ushahidi needed to be more accessible for people in different parts of the world. Moreover, whether affected populations use a computer, cell phone, or another device to report an incident to a crisis map, will depend “on the target audience and technologies to which they have access.”

Finally, there were a good number of other current technologies mentioned once by an organization as important for monitoring human rights in conflict zones. These included a database for storing and organizing information, a server for preserving evidence, web platforms and computers for reporting incidents to a crisis map, and Arc GIS for mapping high risk areas for genocide. One organization representative also said his colleagues were using the Livescribe Smart Pen[38], a tool that digitizes your written notes and then sends them wirelessly to

[38] http://www.livescribe.com/en-us/

a digital platform, where they can be found, searched, structured, and accessed on different devices and web browsers ("Livescribe"). Further, one interviewee noted that Internet and email were valuable current technologies for communications between HROs and those on the ground. Finally, Martus[39], a secure database and server, was mentioned as an important tool.

When asked which human rights violations committed in conflict zones has the technology used by their organizations been good at capturing and which technologies were used in those cases, responses varied. One interviewee responded that both satellite technology and citizen video have helped to obtain violations of International Humanitarian Law. Another said crisis mapping, specifically the Ushahidi platform, has captured persons killed, spreading of disease, chemical poisoning, missing persons, sexual violence against women and others in different contexts. Another said that YouTube, with hundreds of hours of footage from Syria, has captured abuses there such as bombings, murders, and chemical weapons claims.

Future Technology Needs

The question “How can technology be developed further to best meet your organization’s needs for monitoring human rights in conflict zones?” brought further insight. Many interviewees said they needed secure apps. They mentioned apps to aid in documentation and to securely send information (like Dlshad Othman is developing), to help citizen journalists securely produce quality reports of events and send them to trusted recipients (like StoryMaker[40] by the Guardian Project), to protect the user’s identity while browsing the web (like Orweb[41] by the Guardian Project), to alert the user’s network that the user is in trouble and to wipe the user’s phone

[39] https://www.martus.org
[40] https://play.google.com/store/apps/details?id=info.guardianproject.mrapp&hl=en
[41] https://guardianproject.info/apps/orweb/

contents (like Panic![42] by the Guardian Project), to stamp images and footage with details like date, time and geo-location and securely send the marked content to trusted recipients (like InformaCam[43] by Witness and the Guardian Project), and to blur faces in photos or videos (like ObscuraCam[44] by Witness and the Guardian Project).

Many interviewees also believed technology should be developed to better utilize and prepare content for evidence in court. To this end, one interviewee mentioned the need for tools to provide better context for and verify content. Another noted this need and pointed to Storyful[45], a company in Ireland that uses technology to find and verify valuable content on the web using a variety of techniques. Yet another talked about needing a way to transfer content more quickly from the activist or researcher to secure servers where it can be "organized, categorized and analyzed" to avoid the risks of lost content due to the device being destroyed or confiscated.

Four interviewees spoke about the need for tools that better organize and analyze data. One of them said that a more advanced database was needed to look through content quickly and get an overview (to be complimented with personal analysis) and to be able to structure the content in different ways, such as sorting out YouTube videos "by location, date or category", and filtering out irrelevant content. This person also noted the importance of the database being user friendly and automated, requiring less people power, and making it more cost effective. Another interviewee brought up Swift River, covered earlier in the literature review.

Other needs mentioned included more affordable and accessible satellite imagery, facial recognition software for evidence (the person who mentioned this answer was not aware of this technology being used yet), and better access to online risk assessment and analysis reports of

[42] https://play.google.com/store/apps/details?id=org.safermobile.intheclear
[43] http://www.witness.org/cameras-everywhere/witness-labs
[44] http://www.witness.org/cameras-everywhere/witness-labs
[45] http://storyful.com/our-products/

unstable countries. The BRCK (also highlighted earlier) was also mentioned as a needed tool for areas with little or no connectivity. Finally, another interviewee mentioned that new innovations to aid in human rights monitoring were important such as Google Glass[46], wearable technology currently in development that uses voice recognition to capture images and videos, which can be shared with others ("What It Does").

In order to answer the question of how technology is currently being developed to meet their needs, again responses varied. One interviewee said his organization was using facial recognition, though he noted the limitations of its use in identifying perpetrators due to technology issues and the lack of databases with which to compare the images. This same person talked about how his organization is improving the way it presents information through tools like data visualization, photos, videos, and graphic design. Another interviewee brought up the development of crisis mapping, but cautioned against the divide between developers and affected populations who need the mapping. Two more apps that are in development were also mentioned. One is Evidence Locker, mentioned earlier in this thesis; the other is the Rashomon Project[47], an open source tool being developed by UC Berkeley, Witness and the Guardian Project to make comprehensive timelines of events by time-aligning videos and photos of the event.

Combining the questions “What technologies are most urgently needed for monitoring human rights in conflict zones that do not exist yet” and “Do you have any other dream technologies for monitoring human rights in conflict zones” brought to light new items on the interviewees’ wish lists that often combined the functions of several technologies into one. For example, one interviewee desired an evidence management system that would both organize and analyze information and connect that system with one that finds and filters out important

[46] http://www.google.com/glass/start/
[47] http://automation.berkeley.edu/rashomon/

data from social media. Another interviewee would like to see a “one click solution” for “security of communications, the anonymity of being online, and the protection of data”. He added that currently security features are inconvenient since they are not user friendly, which can cause citizen reporters to compromise their security and that of others. A third interviewee wished for tools to better validate video footage by automatically extracting the same features from different videos on the web and matching the up with details like date, weather, and the type of weaponry seen used in the footage. This person also reiterated the need for improved satellite technology with better resolution and access to more frequent images. Another interviewee said they would like to see the use of drones, robotics, and facial recognition software to monitor human rights in conflict zones. Finally, another interviewee said that dream projects often do not get discussed because they are not possible due to budget restraints. However, this person also noted that her organization does advocate to technology companies to try to push their ideas into the developers’ “mind space”.

Ethical Issues

When asked which ethical issues are most urgent when using technology to monitor human rights in conflict zones, several main themes came up. The security of those using the technology was mentioned three times as the biggest concern. One interviewee specifically asserted that “no technology is ever 100% secure”, which is why clarity is important when educating people about its usage. The idea of informed consent was mentioned twice as being the most critical ethical issue, as activists and citizen journalists are not always aware of the code of ethics practiced by professional journalists. Two interviewees mentioned maintaining the integrity of information as an important ethical issue. Of those two, one said it was important only to promote something “we absolutely know is real and true and lives up to journalistic and

evidentiary standards". The other asserted that it is necessary to verify and corroborate information "by checking back with observers on the ground" and to be sure to label content as verified or unverified in its promotion. Still other ethical concerns included making sure those capturing images and footage for documentation avoided exploitation of themselves or others being documented, making sure to tell both sides of the story (e.g. mentioning atrocities committed by Syrian opposition forces and by the Syrian regime), and making sure to secure servers that are housing sensitive information from hackers.

Affecting Policy

When asked what technology "has been most effective in convincing governments and/or publics outside of conflict zones to act" answers again varied. Two interviewees said that satellite technology has been effective in this effort. Of these two, one said that satellite technology, when combined with witness testimony had moved governments to act and cited a case where this strategy was used to affect policy regarding the Rohingya in Burma. The other said that satellite images garner a good amount of attention from the media and policy makers. These images give his organization access to conflict zones it otherwise would not have had. Another interviewee said that press releases and articles about human rights violations posted on his HRO's website and promoted through social media like Twitter, Facebook and YouTube were important ways to influence decision makers. He also mentioned the usefulness of sending out daily briefs or overviews "of some of the main human rights stories of the day". Finally, another interviewee said that advocacy film has been a significant way of affecting policy makers.

In response to the question, "What kind of policy makers at the international, regional or local levels are most receptive to evidence you provide them?" answers were again varied. One

interviewee said that leaders in the United States and Europe Union were some of their main targets, largely because they had been more receptive to the HRO's advocacy efforts. This person also said that they were starting to target countries emerging on to the international scene like Brazil, India, Japan and South Africa. Another interviewee said his organization had the ear of United States senators and congressmen, the Obama Administration and the Human Rights Council of the United Nations. He added that his organization works to build "partnerships" and an "ally network" around the globe, which is helpful for the organization to disseminate information locally. Other relevant matters mentioned were making sure content is promoted in a way that meets evidentiary standards when trying to influence policy makers, and that if information has added value, people are receptive. It was also pointed out that "on some issues an advocacy target will be very receptive and we'll have great impact, and the same target can be completely non-receptive on a different issue".

Use of Open Source Tools

Regarding the use open source technology, the interviewees' opinions ran the gamut. Three had a positive view of the use of open source tools. One said that open source tools are "beneficial" since they are less expensive and "you get a better product". He further mentioned that open source tools are easily adaptable to different situations, which helps when trying to meet the needs of activists on the ground and reiterated, "We are going very much in the direction of open innovation verses a small group who is trying to figure it out". The second noted that he was trying to push these types of tools in his organization, which still uses more mainstream software, but that the organization lacks the resources to develop them. The third interviewee said he felt open source tools were "the right way to go" because they can be adjusted based on the needs of the HRO. Two other interviewees said that they are not using

open source tools; one because the type of work conducted by his department did not require them and the other because her organization lacked the resources to develop them.

Collaboration Using Technology

Several ideas were mentioned in response to the question, “In what ways if any can stakeholders at the international, regional and local levels make use of technology to collaborate better to monitor human rights and hold perpetrators accountable?” One interviewee said that he felt that “putting more information that has already been gathered out into the public domain would be helpful”. Another mentioned the importance of collaborating “with people on the ground and stakeholders in the technology community to come up with something that people can really use…” He also mentioned the need to collaborate with other HROs and organizations in order to verify evidence. A third interviewee mentioned that her organization was seeing more and more technology oriented people becoming interested in politics and affecting change, as they want to use the new tools they are developing in useful ways.

Final Points

It is important to highlight several themes that came up throughout these interviews. One is the value of corroborating different sources of information from technologies and testimony from those on the ground in order to verify an incident. As mentioned earlier, technology such as remote sensing and social media are both useful in providing specific kinds of information and can complement each other, along with personal accounts of those affected. Additionally, the abundance of information from these different technologies has led to the need for a more

efficient way to organize, structure, and analyze all of it in a way that it can be used effectively to influence decision makers or in a court of law.

Several points were also made about technology being only part of the solution for monitoring human rights in conflict zones. The populations affected, who HROs are trying to help, must be kept at the forefront when thinking about the creation of these new tools in order for them to be usable. The needs, opinions, feelings of those on the ground must be incorporated.

Finally, the point that technology is a tool that can be used for good or for bad was made several times. While new tools are being developed to help activists on the ground, powerful leaders are using these same tools to violate human rights. As one interviewee pointed out, “Its’ a game of cat and mouse” and “technology is developing faster than activists can keep up with it” which adds to the intensity of the game.

Recommendations

Combining the literature review with the primary research revealed several common themes regarding technology for monitoring human rights in conflict zones:

- The HRO representatives interviewed echoed the usefulness of ICTs, social media, and geospatial technology. Some were receptive to open source tools and others were not; however, crisis mapping was singled out as a unique open source tool with great potential for this effort.

- Aside from the Ushahidi platform, other open source tools were seen as a positive in terms of affordability and quality and a negative in terms of the expertise required for using these tools.

- Security was a main issue throughout the literature review and primary research. The interviewees desired secure apps that can protect activists and help HROs do their work ethically and efficiently, more user-friendly security tools, and a secure way to store sensitive information.

- An important issue throughout the literature review, data organization, was also expressed as an urgent need by the interviewees. They were looking for ways more efficiently to find, organize, structure, and analyze data to be better able to present information to influence policy.

- The issue of access was a main theme in both primary and secondary research. HROs reiterated the need for improved use of satellite imaging to access closed or dangerous areas of conflict, by making it more affordable, clearer and accessible. The use of UAVs was also explored.

- Ethical issues were a main theme of both primary and secondary research. For the interviewees, issues such as getting informed consent, educating activists on how to use technology securely, how to avoid exploiting themselves and others, and how to report fair and balanced information were mentioned.

- Connectivity was discussed more in the literature review than in primary research. This could be due to most interviewees being in more senior positions and working at the headquarters of their organizations in developed areas, therefore being less familiar with this issue of connectivity. However, some interviewees did mention that connectivity is important and are looking for ways to address this issue.

- Several points unique to primary research included the desire for HROs to have better tools and strategies to present information to the public, human rights violators or other leaders or a court of law. These include the need to corroborate information from different sources in order to verify information, the importance of making sure information meets evidentiary standards, and presenting information that has added value in a way that is visually effective.

- Another point unique to primary research is related to the interview question about "dream technology". Several interviewees mentioned the desire for more innovation, like the use of robotics or new technology like Google Glass, which may have potential to help them with their work.

- Finally, primary research brought out much more the importance of keeping those on the ground at the forefront when creating technology to help them.

In order to address the above points made by the interviewees regarding technology needed for monitoring human rights in conflict zones, this MSGA thesis recommends more collaboration between HROs and technology engineers and developers. This is already

happening with initiatives like the above-mentioned Crowdcrafting project, technology challenges, and HRO and IGO sponsored hackathons. The more HROs can work jointly with technology innovators to develop technology that addresses the above issues, the more effective they will be in achieving their goals of protecting those at risk of abuse in conflict zones.

Closing Theoretical Considerations

This research sheds light on ways in which technology is being used and developed by social entrepreneurs to provide human security to activists and other vulnerable people on the ground in conflict zones. The ethical cosmopolitan aspect of normative theory that each citizen of the world is equal creates a solid foundation for providing human security to any vulnerable person regardless of their location or other classifications. Additionally, the view of the English School that “sovereignty norms” must be adjusted to allow for intervention when necessary to protect individuals, supports the goal of R2P in its aim to protect the vulnerable when their host governments fail to do so. Finally, as we continue on the path of globalization, actors outside state governments, aided by the forces of technology innovation, could provide peaceful alternatives to traditional state-led military interventions.

As this MSGA thesis underlines, "unlike traditional concepts of security, which focus on defending borders from external military threats, human security is concerned with the security of individuals” ("Human Security Backgrounder”). This thesis acknowledges that "consensus breaks down over exactly which threats to the individual should be addressed as human security issues" (Ibid). Its emphasis on a narrow definition of human security, namely, "a focus

on violent threats to individuals and communities" (Ibid), provides a foundation for the inquiry made to assess the evolution of technology and its applications to monitor human rights in conflict zones.

The instrumentalist theoretical framework in this MSGA thesis provides insights into technology as a means for shifting a vulnerable group's situation. The contrasting focus of political entrepreneurs, leaders who manipulate the relations among competing groups in their own states to buttress their positions of power (Jesse and Williams 36-37), and social activists who seize the opportunities different platforms create to make novel interventions, like crisis mapping and satellite imagery analysis, possible, displays a sort of technology competition between these different actors. This further highlights the need for better, faster development of technology for use by human rights defenders.

This research is a call to deepen the awareness of the ways in which the R2P may be decoupled from an emphasis on military intervention even as a last resort. Traditional intervention is criticized in the 21st century, like in earlier historical periods, as a tool to facilitate Western imperialist adventures. As people throughout the world increasingly use technology to address the human rights concerns of the displaced, the marginalized, and the stateless on our planet, the ethical cosmopolitan aspect of normative theory is anchored in practice. Clearly this development calls for a new field of research inquiry into the utilitarian aspects of technology to monitor human rights in conflict zones around the globe.

Conclusion

This study has shown that, while a variety of current technologies are useful for monitoring human rights in conflict zones, more advanced technology is needed for this effort. There is no sign that conflicts will cease to exist in the near or distant future. As such, there will be an ongoing need for HROs, along with IGOs, individuals and other actors who evidence social concern for the vulnerable, to monitor human rights in situations of armed conflict in order to offer protection and hold human rights abusers accountable. The convergence of social entrepreneurs and innovators of technology may create an influential new way to meet this challenge. In this unprecedented context, human security in our 21st century world may be found not exclusively in a traditional system of states. Rather, an emerging instrumentalism for human security may be sustained by those aside from state actors, who evidence in their daily actions to hold the vulnerable as the focus of their intention and interest.

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Appendix A (Interview Questions)

Current technology for monitoring human rights

What technologies (including ICTs, Geospatial, Social Media, and others) have been most effective for your organization to monitor human rights in conflict zones?

How have these technologies been useful?

Which human rights abuses committed in conflict zones has the technology you used been most successful at capturing and why? Which technology has been used in these cases?

Future technology for monitoring human rights

How can technology be developed further to best meet your organization's needs for monitoring human rights in conflict zones?

What technologies are currently being developed that you anticipate using for monitoring human rights in conflict zones in the near future?

What technologies are most urgently needed for monitoring human rights in conflict zones that do not exist yet?

Do you have any other dream technologies for monitoring human rights in conflict zones?

Ethical issues

What ethical issues are most urgent regarding your organization's current use of technology for monitoring human rights in conflict zones?

What technology is being developed or should be developed to address these issues?

Affecting policy

How has technology been most effective in convincing governments and/or publics outside of conflict zones to act?

What kind of policy makers at the international, regional or local levels are most receptive to evidence you provide them?

Collaboration

What do you think about open-source tools such as HURIDOCS's OpenEvsys, HuriSearch, or Martus? Which open-source tools do you see as being the most effective heading into the future?

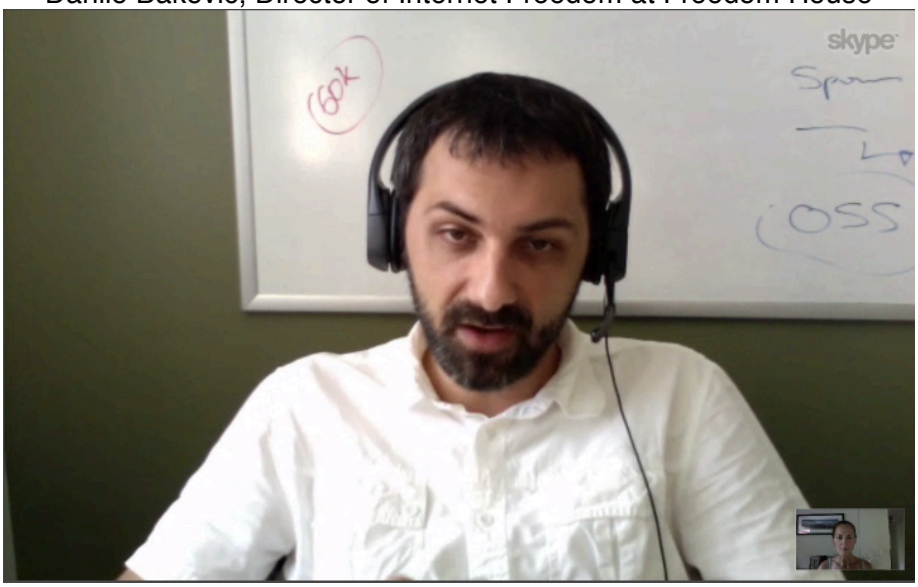
In what ways if any can stakeholders at the international, regional and local levels make use of technology to collaborate better to monitor human rights and hold perpetrators accountable?

Other

Are there any other important issues not covered above regarding the effectiveness of current and future technology for monitoring human rights in conflict zones?

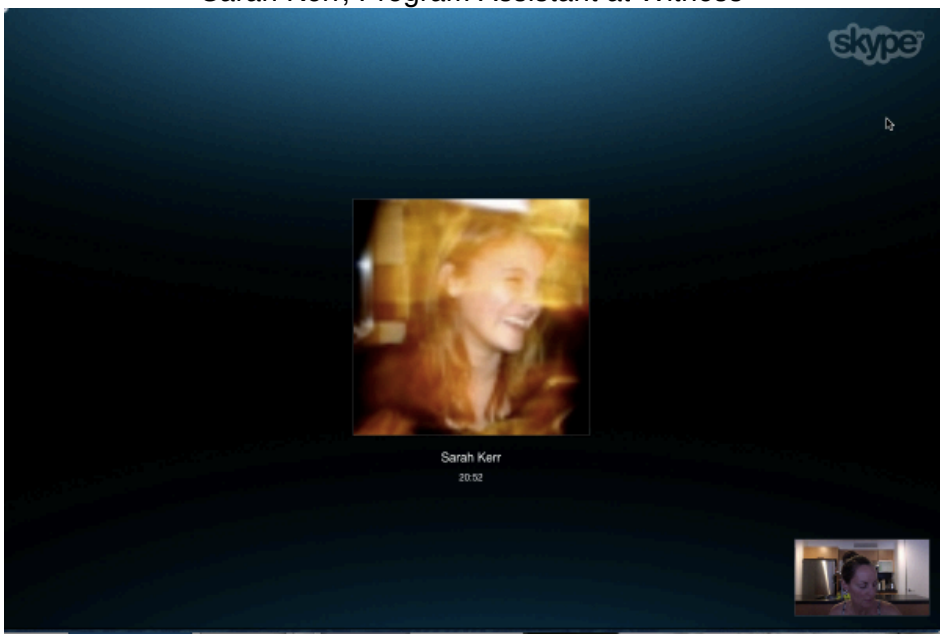
Appendix B (The Six Interviews Conducted Via Skype)

Danilo Bakovic, Director of Internet Freedom at Freedom House

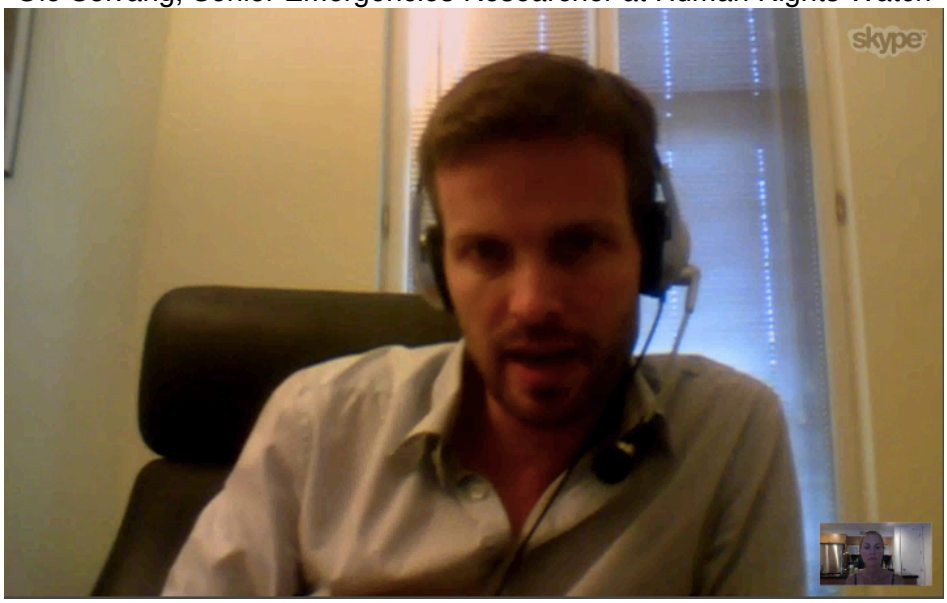


Kyle Matthews, Senior Deputy Director at the Will to Intervene Project, Montreal Institute for Genocide and Human Rights Studies

Sarah Kerr, Program Assistant at Witness



Ole Solvang, Senior Emergencies Researcher at Human Rights Watch



Christoph Koettl, Emergencies Response Manager at Amnesty International

Angela Oduor, Community Developer Liaison at Ushahidi