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The State of the Field: Technology for Atrocity Response

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Abstract: *Technology is rapidly advancing in both sophistication and accessibility. This is particularly true of information and communications technology (ICT), adoption of which is growing rapidly in less-developed countries. Such tools provide a great deal of promise for practitioners dedicated to mass atrocity response, which encompasses prediction, prevention, mitigation, and documentation for the purposes of this article. First, this article considers the current technological landscape as it applies to human rights and outlines the various tools and techniques which are relevant to mass atrocity response, including mobile phones, social media, crisis mapping, satellite imagery, and unmanned aerial vehicles. This overview concludes with analysis of likely future trends in the field of technology as applied to mass atrocity response.*

Keywords: *humanitarian technologies, genocide, atrocity response, data gathering, crisis mapping*

Introduction: The Technological Landscape

This year marks the twentieth anniversary of the Rwandan genocide and much has been made of what has changed – and what has stayed the same – in the two decades since that mass slaughter. The world today is a very different place than in 1994, with a wide range of tools available to those aiming to prevent mass atrocities. Among these are the Responsibility to Protect (R2P) doctrine and the International Criminal Court, both of which have developed in an atmosphere of steadily changing attitudes amongst both policymakers and members of the general public with regard to where sovereignty ends and where the need to protect civilians begins. In 2014 it seems strange to think that it was once almost absurd to expect governments to at the very least consider concrete action to prevent, mitigate, or punish mass atrocities on humanitarian grounds. However, the new tools available to the preventers of mass atrocities go beyond the normative, judicial, and diplomatic realms. In fact, these tools also extend beyond what governments alone can achieve with regard to preventing crimes against humanity. The rapid advancement of technology over the past two decades means that non-state actors have the ability to gather, analyze, and communicate information for the sake of predicting, preventing, and mitigating atrocities.

Technology in all its many forms is pervasive in every aspect of modern life and is now essential to the ways that people work, learn, communicate, socialize, and organize themselves. This is certainly true of developed countries but also increasingly so in less-developed regions, where many entrepreneurs and other creative people have found ways to do more with less. Such localized solutions to localized problems explain why, for example, subscribers to mobile phone-based financial services outnumbered traditional bank account holders in nine African countries as of June 2014.[1] Naturally, considering the general excitement surrounding the role of technology—commonly referred to in the humanitarian realm as information and communication technology, or ICT—in so many aspects of modern life all over the world, much of that enthusiasm and promise extends to humanitarians, including those in the atrocity prevention field. This is a time of great opportunity for those working to stop crimes against humanity if they are creative and open to new possibilities.

The reason for this opportunity is clear upon closer inspection of the technological landscape in 2014. According to the International Telecommunications Union (ITU), the United Nations agency responsible for overseeing various aspects of ICTs, the number of mobile phone subscriptions is on track to reach nearly 7 billion by the end of this year, which represents a mobile penetration rate (i.e. the proportion of a given population who own mobile phones) of 90% in developing countries.[2] Even more importantly, the number

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of these subscriptions representing mobile broadband (i.e. internet-enabled) users is expected to reach 2.3 billion within the same time frame. Combined with the number of people accessing the internet through other means, the total number of internet users by the end of 2014 will near 3 billion.[3]

All of this means that we now live in a time of unprecedented speed and reach in communications. Twenty years ago the most advanced piece of technology that the majority of humans could access was a television or a fax machine; although personal computers, the internet, and mobile phones were becoming more common, they remained expensive and out of reach for most people and were seen more as toys or work tools than as parts of everyday life. This meant that most people with an interest in world events had to rely upon mass media to get information and so were at the mercy of producers and editors who decided what they should watch, listen to, or read. Most adult humans now have the theoretical ability to reach out and communicate with virtually anyone else in the world – even in some of the poorest, remotest, and most violent parts of the planet. This newfound ubiquity of mobile technology is changing economies, governance, development, and numerous types of service delivery and social interactions worldwide. The human rights and human security fields enjoy many of these benefits since NGOs, governments, and activists now have the ability to gather and analyze data about ongoing conflicts and atrocities in new and compelling ways. This is more than just an academic exercise too since many organizations, such as the Sentinel Project, are focused on using technology to actively assist the people on the ground, living in harm's way.

The potential presented by ICTs is clear; the questions to answer now are, just how are these new tools being used in mass atrocity response and what lies ahead? A couple of notes on terminology are warranted before delving further into this subject. First, although the term genocide is still obviously valuable and in common usage, this article takes a broader view towards mass atrocities generally, as is the policy of the author's organization. Such an approach prioritizes the saving of lives in any situation of systematic violence against a civilian population and avoids the often interminable and unproductive debates that surround whether or not a given situation should be classified as genocide. Second, the discussion here is about *response* to mass atrocities rather than exclusively prevention. Although the prediction and prevention of mass atrocities including genocide remains the absolute ideal in this field, the reality is that such crimes will continue to occur in some form and on some scale for the foreseeable future. Therefore, those opposed to them must be prepared to engage and respond at all stages of the process starting with early warning and proceeding through prevention, late warning and mitigation of the impacts of atrocities that do occur, direct assistance to threatened communities and survivors, documentation of abuses, advocacy for intervention, and post-atrocity justice and reconciliation.

Tools Versus Techniques

Fortunately, ICTs can offer support to all the forms of mass atrocity response listed above. This article aims to provide a high-level overview with an equal focus on techniques and the categories of tools that support them, illustrated with current examples. This highlights one of the key truths of using technology for any endeavour since the tools in question are just that – tools. Just as with any type of work, technology only enhances human skill, intelligence, and effort rather than replacing them. There is well-founded optimism surrounding technology – particularly mobile phones and social media – and its potential to improve the human condition, but this has in the past led to seemingly untempered and unquestioning enthusiasm for the potential in question. Fortunately, recent years have seen a marked decline in the brand of "cyber utopianism" that predicted the inevitable arrival of human rights and liberal democracy following rapidly on the heels of internet access in many of the world's dangerous places. Very few observers still believe that simply introducing an unspecified category of tools labeled "technology" will be the panacea to defend human rights and save lives.

ICTs alone do not respond to mass atrocities but in the hands of skilled and knowledgeable practitioners they can drastically enhance and augment the impact of such activities. It is also worth noting that "technology" is not a new category of tools which only recently came into existence. Activists, human rights defenders, and other humanitarians have long been using the best tools at their disposal in support of their causes, whether this was the printing press used to produce political pamphlets, underground radio stations used to coordinate resistance movements, typewriters and photocopiers for publishing banned literature, or social media used to mobilize protests. Anti-atrocity activities should be defined as much or more by what responders are *doing* rather than just what they are *using* in order to do it. For example, though not directly related to mass atrocities, the so-called "Twitter revolution" of pro-democracy protests in Iran in 2009 was

characterized in Western eyes more by the exciting new tools the opposition was using rather than what they were trying to achieve. In reality, Twitter and similar tools were merely used to spread a political message and encourage popular engagement in the cause – both activities which have happened throughout history long before the advent of social media. In fact, the regime against which the protesters voiced their opposition had itself come to power three decades prior during a series of mass protests which could just as well have been dubbed the "tape recorder revolution" for the means by which the exiled opposition leader of the time smuggled his message to the masses.

The need to focus on human behavior and effective techniques before considering the tools which can support them is essential for effective mass atrocity response. This is especially true since activities like early warning have broad applicability but the form that such an effort takes is highly dependent on local conditions. For example, a mobile phone-based crowdsourcing system might work for gathering data in a settled and highly connected (if still impoverished) part of rural Kenya with 80% or greater mobile penetration; however, that exact same system would almost certainly fail amongst a displaced and heavily persecuted minority population in Burma (Myanmar) where mobile penetration is likely below 10% at the time of writing. These are the two countries where the Sentinel Project has the greatest direct experience and will be mentioned amongst the examples below whenever possible.

Communications and Data Gathering

Regardless of what type of technology is being discussed, when we talk about ICT for mass atrocity response (or defending human rights more broadly), we almost always mean enhancing the ability of relevant actors to gather, transmit, store, analyze, and disseminate information. This is true whether we are referring to mobile phones, social media, big data, geospatial imaging (such as satellites or unmanned aerial vehicles, discussed further below), or mesh networks. This changing landscape means that data can now be gathered with unprecedented speed and scale thanks to practices such as *crowdsourcing*, which solicits incident reports and other data from members of the general population in an area of interest. This concept first came to international prominence in Kenya, where the 2007 general election sparked several weeks of serious violence which killed 1,200 people and displaced hundreds of thousands of others. Under the circumstances, getting accurate information was a serious challenge for many journalists and members of the general public. Fortunately, one journalist employed the concept of taking in reports from members of the public via text messaging (i.e. short message service, or SMS) and the internet before mapping them onto what ultimately became the Ushahidi crisis mapping platform, which is discussed further below. Such rapid gathering of data would have been impossible without widespread use of mobile phones, a situation which has only improved since the creation of Ushahidi.

Of course, crowdsourcing is not a perfect method of gathering data and has been criticized for running the risk of taking in faulty or duplicate reports which can contaminate a data set. However, many techniques are available to mitigate this risk and improve the quality of data, including cross checking reports from multiple sources and another method known as *crowdseeding*, which gathers data from trained, trusted informants distributed throughout an area of interest. This was used with some success by the Voix des Kivus research project in the eastern Democratic Republic of Congo, which mitigated various economic, security, and infrastructural challenges in the conflict-affected South Kivu province by distributing mobile phones to specific members of the population and training them on how to submit coded reports of incidents such as militia movements.[4] Although this approach results in much smaller amounts of data being gathered, any shortfalls in quantity are theoretically compensated in quality.

The Sentinel Project is currently operating a project in southeastern Kenya called Una Hakika (Swahili for "Are you sure?"), which takes a hybrid approach to crowdsourcing and crowdseeding since the two have complementary strengths and weaknesses. Una Hakika operates essentially as an information service which uses mobile phones to monitor and counter the spread of misinformation (e.g. "someone has supplied the Orma with 3,000 AK-47s to destroy the Pokomo" or "a Pokomo health worker tried injecting poison into Orma children") which has been linked to interethnic violence in the Tana Delta over the past two years. This monitoring is done by soliciting rumour reports from members of the general public, working to verify whether or not they are true, and then reporting back to the community with neutral, accurate information so that people can make more informed decisions about how to interact with neighbouring ethnic groups. Recognizing that simple crowdsourcing would not produce reliable or responsive data, the Una Hakika team also incorporated crowdseeding by training nearly two hundred community ambassadors spread throughout

sixteen villages. These community ambassadors act as the human face of Una Hakika and facilitate the effective intake and verification of rumour reports as well as helping to dispel incendiary misinformation.[5]

The rapid rise of internet usage also means that data gathering can happen without the active participation of those producing the data. For example, while crowdsourcing and crowd seeding require people to directly and actively submit data to a given project, *data mining* or *web mining* are automated methods of gathering data which observe online activity. One example of this is Syria Tracker,[6] which is a crisis mapping project that presents a geographical visualization of thousands of human rights violations and killings during the current civil war in Syria. The data to produce this map is gathered using the Healthmap[7] platform, which searches thousands of online sources for reports of killings, combined with reports by individual observers actually in conflict zones. When verified and combined, these sources produce what is considered a very accurate picture of the death toll in Syria.[8] Rather than just gathering online reports of real-world incidents itself, web mining can also be used to observe online behaviour itself, which can be a useful warning indicator in an increasingly online world. One example of this is the Sentinel Project's Hatebase[9] platform, which monitors Twitter for usage of hate speech terms and uses machine learning techniques to determine which instances do or do not qualify as hate speech since this is highly context dependent. If the vision of Hatebase is fully realized, it could become a useful early warning tool when real-time hate speech trends and patterns are matched with real-world events being tracked through other means in order to find correlational relationships.

Crisis Mapping

Once data is gathered it needs to be interpreted and one of the best ways of doing this in a crisis situation is visualization, which enables analysts to quickly derive intuitive insights from the data. The wide range of ways for data to be visualized forms an entire field in itself, but one of the most relevant to mass atrocity response is crisis mapping, a technique made famous by Ushahidi (explained above) and exemplified in numerous deployments around the world. One of the best-known of these is related to a natural disaster but demonstrates the potential here. An earthquake brought massive destruction to Haiti in 2010 and one of the key elements of the initial response was a deployment of Ushahidi which was able to rapidly gather and visualize reports of conditions in various parts of the country which could then be used by responders to more effectively direct resources to help people in need.[10] While some critics have highlighted the weaknesses of this approach, particularly in relation to the potential unreliability of the data gathered, the speed with which situational awareness was established and maintained gave Ushahidi a distinct advantage in this case when compared to traditional methods involving dedicated teams of observers traveling to areas to conduct damage and needs assessments. Such tools have clear advantages for mass atrocity response, whether for the sake of early warning, delivering humanitarian aid, or documentation, an example of which is Threatwiki, a tool developed for situation tracking and visualization in countries at risk of mass atrocities.[11] More effective understanding of such situations in a geographical and chronological context will contribute to more effective responses.

Documentation

Not every mass atrocity situation will be prevented and so there remains a need to document crimes and bring their perpetrators to justice when they do end; many of the tools outlined above also have value in this area. One of the most interesting contemporary cases of technology being used for atrocity documentation is the Satellite Sentinel Project (no connection the Sentinel Project for which the author works), which launched in December 2010 and uses commercially available satellite imagery to document abuses in Sudan.[12] This consortium of NGOs, private companies, and researchers is able to observe in near real time when either government or rebel forces attack civilian populations, combining this imagery with reporting by observers on the ground to raise the alarm. Although this work has mostly been done in order to support advocacy efforts at this point, it also has clear potential for early warning since forces can theoretically be observed as they gather and move towards civilian targets. If integrated into a broader early warning system that fuses multiple data sources, satellite imagery has impressive potential value due to the greater access it grants to otherwise dangerous or denied areas. Although images require other data to give them context, there is an intrinsic emotional and documentary power to them, as exemplified by Amnesty International's satellite reconnaissance of North Korean prison camps in October 2013 in order to demonstrate the scale and nature of mass political repression in that most secretive of states.[13]

Future Trends

It seems fitting to conclude an article examining the potential for technology to serve mass atrocity response by looking towards what the future may hold. Of course, it is impossible to predict the future, particularly the future of technology both in terms of technical advances themselves as well as the social and cultural conditions surrounding the use of technology. Just as the form and impact of social media today would come as a surprise to most people two decades ago, the technologies of two decades from now will likely be just as surprising, as will the ways in which people use them. That being said, there are some general trends which seem likely to continue.

First amongst these trends is that advanced technology will continue to become cheaper, more usable, and therefore more accessible to mass atrocity responders. Historically speaking, this is the general pattern seen as many technologies that were initially developed for military, governmental, or industrial use eventually come into the hands of the general public in one form or another. This can be seen in how things like aircraft, radios, and even the internet developed. Until a few years ago, the idea of an organization based in civil society being able to use satellite imagery to spy upon the harmful activities of a foreign government would have seemed impossible, but as private companies have opened up a field which was once the sole preserve of a few powerful states, it has become a reality. Although still very expensive compared to other means of data collection, multiple NGOs have now made extensive use of satellite imagery in the defense of human rights. Another field following the same pattern is that of unmanned aerial vehicles (UAVs), which are more popularly known as drones. Although commonly associated with military or state intelligence activities, these devices are finding increasing use for disaster response, law enforcement, conservation, commercial activities, and even recreation. The capabilities of devices that would have cost hundreds *of* thousands of dollars to obtain ten years ago can now be had for hundreds *or* thousands of dollars. Several NGOs such as the World Wildlife Fund are now using UAVs for anti-poaching work to protect endangered species[14] and it seems likely that the near future will also see UAVs used for protecting endangered humans by providing airborne early warning of attacks.[15]

The second trend is a shift already underway from macro-level early warning and response to mass atrocities down to the micro-level. For many years, early warning projects of all types have focused on state-level prediction of mass atrocities, which often fails to take into account the remarkable degree of sub-national diversity of security situations in many countries as well as the potential for non-state actors to independently engage in mass atrocity crimes. Although state-level early warning certainly has great value for focusing monitoring and intervention efforts, truly effective prevention and mitigation require a more granular view of the situation which will enable more localized responses, an area in which mass atrocity responders can learn a great deal from the disaster management field.[16] This shift is likely to occur not only in terms of geographical focus but also chronology with the ultimate result being a change from predicting which countries are likely to experience mass atrocities in three to five years to predicting which cities, towns, and villages are at risk within the next month, week, or day. Such an approach is certainly possible with the tools outlined above. Once effective localized early warning is the norm, localized early response is likely to follow, which itself is increasingly likely to include the people who are most threatened in the prevention of atrocities which target them. Such strengthening of communal resilience will be built upon the continuing reality that the international community is not coming to the rescue in most mass atrocity scenarios and people must therefore rely upon themselves for self-protection, which includes many non-violent options.[17] Such options will become increasingly realistic and effective as technology advances and creative, committed people continue working to find new ways of using these tools in opposition to the gravest abuses of human rights.

Endnotes

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