Human Rights Documentation in Limited Access Areas

The Use of Technology in War Crimes and Human Rights Abuse Investigations

Steven Livingston
Senior Fellow
Carr Center for Human Rights Policy

Sushma Raman
Executive Director
Carr Center for Human Rights Policy

HARVARD Kennedy School
CARR CENTER
for Human Rights Policy

CARR CENTER DISCUSSION PAPER SERIES

Discussion Paper
2018-003

For Academic Citation: Steven Livingston and Sushma Raman. Human Rights Documentation in Limited Access Areas. CCDP 2018-003, May 2018.

Carr Center for Human Rights Policy
Harvard Kennedy School
79 JFK Street
Cambridge, MA 02138

www.carrcenter.hks.harvard.edu

Human Rights Documentation in Limited Access Areas

The Use of Technology in War Crimes and Human Rights Abuse Investigations

Steven Livingston is Professor of Media and Public Affairs and International Affairs with appointments in the School of Media and Public Affairs (SMPA) and the Elliott School of International Affairs (ESIA) at The George Washington University. Currently, he is also a Visiting Scholar at the Brookings Institution in governance studies. He served as the director of the Political Communication Program when it was a degree-granting entity within SMPA (1996-2002; 2004-2006). In 2004, he served as acting director of the School of Media and Public Affairs, a position held until August 2006. He also founded the Public Diplomacy Institute (PDI) at GWU in 2000 and served as the chairman of the Board of Directors until 2008. PDI is now called the Institute for Public Diplomacy and Global Communication. Livingston's research and teaching focus on media/information technology, national security and global politics.

Sushma Raman is Carr Center's Executive Director. Sushma brings a rich and diverse background in philanthropy, human rights and social justice through her work in the U.S. and globally with the Ford Foundation and the Open Society Foundations, as well as her experience leading human rights programs, philanthropic collaboratives, and social justice foundations. Sushma has served as a judge for the Robert F. Kennedy Center's international human rights award, a prestigious award given annually to a courageous leader working to end injustice and improve the human condition. She has also taught graduate public policy courses on global civil society, the state and the NGO sector; inter-sectoral leadership; as well as nonprofit policy and management at the University of Southern California and University of California at Los Angeles.

HARVARD Kennedy School
CARR CENTER
for Human Rights Policy

DISCUSSION PAPER
MAY 2018

Contents

Abstract

We offer a theoretical framework for understanding the role of technological capabilities (affordances) in documenting war crimes and human rights abuses in limited access areas. We focus on three digital affordances: geospatial, digital network, and digital forensic science. The paper argues that by leveraging digital affordances, human rights groups gain access to otherwise inaccessible areas, or to information that has been degraded in an effort to obfuscate culpability. We also argue that the use of digital technology invites a reassessment of what we mean when we speak of a human rights organization. Organizational morphology in digital space is hybrid in nature, with traditional organizations also taking on or joining more virtual or solely digital forms.

Introduction

Information politics describes the tactics used by transnational advocacy groups to pressure states into closer compliance with broadly shared norms. International nongovernmental organizations (INGOs) such as Amnesty International and Human Rights Watch rely on domestic NGOs for accurate, credible information about abuses and war crimes. They then package that information into narratives that are meant to change state behavior (Keck and Sikkink 1998).[1] By overcoming the "deliberate suppression of information that sustains many abuses of power," transnational advocacy networks (TANs), coalitions of local NGOs, INGOs, international organizations, and other nonstate and state actors, help "reframe international and domestic debates, changing their terms, their sites, and the configuration of participants" (Keck and Sikkink 1998, 77-80). At the start of the process, however, are local civil society actors interacting with INGOs.

Forging links with local organizations allows groups to receive and monitor information from many countries at a low cost. Local groups, in turn, depend on international contacts to get their information out and to help protect them in their work (Keck and Sikkink, 496-498).

Hill, Moore, and Mukherjee argue that the number and robustness of domestic NGOs has a direct impact on the accuracy of information available to INGOs. "Greater information-gathering capacity enhances the domestic NGOs' ability to be more precise

[1] See also Susan Burgerman, 2001, *Moral Victories: How Activists Provoke Multilateral Action*, Ithaca, NY: Cornell University Press; Daniel Thomas, 2002, "Boomerangs and Superpower: International Norms, Transnational Networks and U.S Foreign Policy," *Cambridge Review of International Affairs* 15: 25–43; James Ron, Howard Ramos, Kathleen Rogers, 2005, "Transnational Information Politics: NGO Human Rights Reporting, 1986–2000," *International Studies Quarterly* 49: 557–587; Sanjeev Khagram, James Riker, and Kathryn Sikkink, editors, 2002, *Restructuring World Politics: Transnational Social Movements, Networks and Norms*, Minneapolis, MN: University of Minnesota Press; Ann Marie Clark, 2001, *Diplomacy of Conscience: Amnesty International and Changing Human Rights Norms*, Princeton, NJ: Princeton University Press; Richard Higgott, Geoffrey Underhill, Andreas Bieler, 2000, *Non-State Actors and Authority in the Global System*, New York, NY: Routledge.

and careful with respect to their analysis of the government's human rights practices."[2] Similarly, Murdie and Davis found that the greater the number of domestic NGOs present within a state the greater the likelihood that naming and shaming initiatives by TANs will be successful. "This domestic presence of HROs (human rights organizations) helps local social movements pressure their regime for improved human rights from below" (Murdie and Davis 2012). Even the presence of civil society organizations not directly related to human rights have been found to have similar effects (Landman 2005). If it is indeed the case, if local civil society is crucial to transnational advocacy, a serious problem emerges.

In many instances, the ability of local NGOs and INGOs to overcome the "deliberate suppression of information" is far from certain. As lethal weapons flood fragile and failed states, local and international journalists and human rights investigators confront grave dangers in their attempts to document war crimes and human rights abuses ("Fragile States Index Report" 2017).[3] Some conflict zones are simply too dangerous for journalists and human rights investigators to develop local contacts, conduct interviews, and gather physical evidence (Groome 2001). Not only is the safety of human rights investigators put in jeopardy, the persons with whom they speak are at risk (Boutruche 2016). We refer to *limited access areas* when speaking of places that are too dangerous or distant for investigators to safely travel and work.

In response, human rights organizations have taken advantage of a growing capacity to investigate events remotely using technological instruments and methods. Even where international investigator's access is blocked, evidence collected by technical means corroborate (or not) accounts provided by sometimes unreliable eyewitnesses and survivors (*Identifying the Culprit* 2014). The point of this paper is to offer a theoretical framework for understanding transnational advocacy in the 21st century. We want to know more about the effects of digital technologies in human rights and war crimes documentation, especially in limited access areas. We review the use of commercial,

---

[2] See also Amanda Murdie, 2009a, "The Impact of Human Rights NGO Activity on Human Right Practices," *International NGO Journal* 4 (10):421–440; Amanda Murdie, 2014, *Help or Harm: The Human Security Effects of International NGOs*, Redwood City, CA: Stanford University Press.

[3] See also "Interactive Maps and Charts of Armed Violence Indicators," Small Arms Survey, The Geneva Graduate Institute for International Studies and Development. http://www.smallarmssurvey.org/tools/interactive-map-charts-on-armed-violence.html.

high-resolution remote sensing satellites and other geospatial technologies, digital network data analytics, and DNA sequencing technology.

Relevant technologies are organized according to their *affordances* (Gibson 1986).[4] In design studies and human/computer interface research, an affordance concerns the *qualities or properties of an object that define its potential uses*. By virtue of their design, chairs invite sitting, beds invite reclining, and door handles invite the opening and closing of doors. Similarly, digital affordances concern design elements in technology that invite certain uses. Some online platforms invite user engagement with content, while other designs limit interaction exclusively to reading (Earl and Kimport 2011).[5] We consider three distinct but overlapping digital affordances: 1. geospatial, 2. digital network, and 3. digital forensic affordances. *Geospatial affordances* involve the use of commercial remote sensing satellites, geographic information systems, unmanned aerial vehicles, and geographic positioning satellites and receivers (GPS) to track events on earth. *Digital network affordances* involve the use of digital platforms to crowdsource data or to leverage the latent analytical capacity of electronically networked individuals to analyze large, complex data sets. Finally, *digital forensic science* involves collecting, preserving, and analyzing evidence of abuses and crimes for documentation and reconstruction of an event for use by the public or courts. Digital forensic affordances utilize benchtop instruments to analyze material objects – such as bone fragments or paper documents – and translate them into binary code.

All three affordances have in common what Viktor Mayer-Schönberger and Kenneth Cukier (2013) call *datafication*: the quantification of previously unobservable relationships. The proliferation of mobile phones, CCTV cameras, and myriad other sensor platforms account for datafication. As of 2017, there were 8.2 billion wireless devices around the world (GMSA Intelligence 2017). By 2020, the National Science Foundation estimates that the Internet of Things (IoT) will have 50 billion connected "things" (Internet of Things 2017). Sensors are found in a wide variety of locations, including Earth's orbit. By measuring time and space, geographical positioning satellites (GPS) and remote sensing satellites allow for precise measurement of spatial and temporal relations among features on the earth's surface. Facebook can be thought

---

[4] See also Joanna McGrenere and Wayne Ho, 2000, "Affordances: Clarifying and Evolving a Concept," in *Proceedings of Graphics Interface 2000*: 179–186; Donald A. Norman, 1988, *The Design of Everyday Things*, New York, NY: Doubleday.

[5] See also W. Lance Bennet and Alexandra Segerberg, 2013, *The Logic of Connective Action*, New York, NY: Cambridge University Press.

of as a digitally networked sensor platform that identifies social and sometimes spatial patterns among its two billion users and their expressed sentiments (likes, posted links, and narratives).

In sum, we argue that by leveraging various digital technologies, now possible with the proliferation of microprocessors that create technological affordances, human rights organizations can overcome the deliberate suppression of information about human rights violations by governments and private actors, even in limited access areas. We begin with a brief review of transnational advocacy networks and information politics. We then turn to important limitations faced by fact-finding and documentation efforts. That is followed by a review of affordance theory as it applies to human rights investigations. We conclude with a consideration of the ethical and political limitations of our model.

Transnational Advocacy and Technology

At the core of transnational human rights advocacy, "is the production, exchange, and strategic use of information" (Keck and Sikkink 1998). Human rights groups "provide information that would not otherwise be available, from sources that might not otherwise be heard, and make it comprehensible and useful to activists and publics who may be geographically and/or socially distant" (Keck and Sikkink 1998). Local NGOs exchange information with larger and more prominent INGOs to create compelling narratives that are intended to pressure noncompliant states into closer alignment with broadly shared international norms.[6] The process is triggered when the grievances and

[6] See also Martha Finnemore and Kathryn Sikkink, 1998, "International Norm Dynamics and Political Change," *International Organization* 52(4): 887–917; David H. Lumsdaine, 1993, *Moral Vision in International Politics: The Foreign Aid Regime, 1949– 1989*, Princeton, NJ: Princeton University Press; Audie Klotz, 1995, *Norms in International Relations: The Struggle against Apartheid*, Ithaca, NY: Cornell University Press; Daniel C. Thomas, 2001, *The Helsinki Effect: International Norms, Human Rights, and the Demise of Communism*, Princeton, NJ: Princeton University Press; Martha Finnemore, 1993, "International Organizations as Teachers of Norms," *International Organization* 47(3): 565–597; Arie M. Kacowicz, 2005, *The Impact of Norms in International Society: the Latin American Experience, 1881-2001*, Notre Dame, IN: University of Notre Dame Press; H. Richard Friman, editor, 2015, *The Politics of Leverage in International Relations: Name, Shame, and Sanction*, New York, NY: Palgrave Macmillan; Jean Grugel and Enrique Peruzzotti, 2015, "Global Norms, Domestic Politics: Children's Rights and Civil Society in Argentina," in *Global Matters for Non-Governmental Public Action*, edited by Jude Howell, 18–40, New York: Palgrave Macmillan.

demands of local individuals and NGOs are blocked by an oppressive state or by other dominant political authorities. Local and international NGOs, international organizations, and some government offices in some states gather and package information about abuses into compelling narratives that are intended to pressure a noncompliant state into recognizing the violated norms and, eventually, adopt them (Risse *et al* 1999).[7]

Much of the TAN research literature assumes *relatively* benign political conditions where local and international human rights investigators have at least a degree of unfettered access to one another, to the site of alleged abuse, to witnesses and physical evidence, and to INGOs. Argentina during the military junta, for example, was dangerous, though not so dangerous as to obstruct the formation of important civil society groups, including the Mothers of the Plaza de Mayo and the Grandmothers of the Plaza de Mayo. The junta also allowed fact-finding missions, including one by Amnesty International in 1976, the Inter-American Commission in 1978, and a delegation in 1983 led by Eric Stover and forensic anthropologist Clyde Snow (Joyce and Stover 1991). Snow was even allowed to create a local forensic anthropology organization that had access to relatively undisturbed human remains. Much of the extant transnational advocacy literature assumes what is often a rare condition: repression that is severe enough to warrant an investigation by a fact-finding mission but not so severe as to make such a mission impossible.

Human Rights Watch (2017) notes in its investigation guidelines that "Security conditions and time limitations can greatly affect where researchers can conduct investigations." The Raoul Wallenberg Institute's "Lund Guidelines" (2009: 8) make it clear that on-the-ground fact-finding raises serious security concerns.

> *If the government or any other party finds out this information and there are concerns as to the safety of an interviewee, then the NGO may wish to cancel the interview or to abandon the mission and should seek a guarantee from the government that the interviewee or prospective interviewee will not be*

[7] See also Thomas Risse, Stephan C. Ropp, and Kathryn Sikkink, 2013, *The Persistent Power of Human Rights*, New York, NY: Cambridge University Press.

persecuted, victimized or otherwise put in a worse position for having been willing to cooperate with the delegation.

This is not an uncommon condition. The International Criminal Court's (ICC) cases against Kenya's deputy president and a former broadcaster accused of encouraging violence during the 2006-07 elections collapsed after seventeen witnesses withdrew their cooperation with the court after receiving threats (Odula 2016).[8] At least one journalist and several witnesses were murdered under suspicious circumstances (Rosen 2015). Similar security concerns led to the collapse of the ICC case against the president, too. Unstable and violent conditions also place investigators at risk. In March 2017, two United Nations human rights investigators and their Congolese interpreter were murdered as they undertook a fact-finding mission in the Democratic Republic of the Congo (Pinault 2017). In Honduras, at least eight defenders were murdered in 2016 (UN High Commissioner for Human Rights 2016). And in Guatemala, a local human rights group counted 223 attacks against human rights workers, including 14 murders in 2016, seven in 2014, and twelve in 2015 (International Federation for Human Rights 2016). In July 2017, the director of Amnesty International in Turkey was detained along with seven other human rights investigators and two trainers (Amnesty International 2017). Turkey claimed the detained human rights advocates were under investigation for membership in a "terror group." The month before, the chairman of Amnesty International-Turkey was arrested on charges of having links to the Gulenists, a Islamic group Turkish authorities accuse of masterminding the 2016 coup attempt (Girit 2017).

States also use Visa restrictions to prevent human rights investigators from monitoring alleged abuse. Three United Nations investigators were blocked from entering Burundi in 2016 following the publication of a UN report that offered "abundant evidence of gross human rights violations," possibly amounting to crimes against humanity (UN Human Rights Office of the High Commissioner 2016).[9] In another case in 2017, the Israeli government denied a work visa for a Human Rights Watch investigator. Eventually, Israel issued a visa, though Bahrain barred the same investigator (Human Rights Watch 2017a).

---

[8] See also "Kenya 'ICC Defense Witness' in Ruto's Trial Killed," BBC, January 6, 2015. http://www.bbc.com/news/world-africa-30703876; "Claims of Witnesses in Kenya ICC Trial 'Disappearing'," BBC, February 8, 2013. http://www.bbc.com/news/world-africa-21382339

[9] See also 2016, "Burundi bars UN investigators over report on human rights abuses," BBC, October 11. http://www.bbc.com/news/world-africa-37614790.

The suppression of information also includes the destruction of evidence linking abuses to perpetrators (Human Rights Watch 2014).[10] The remains of those massacred and disappeared by abusive regimes and groups are burned, scattered, or dumped in the sea in efforts to block investigations. This is especially detrimental to the work of organizations such as Physicians for Human Rights, the Argentinian Forensic Anthropology Team, and the International Commission on Missing Persons (ICMP), all of which must have both access to the site of abuse and the ability to discover and carefully analyze crucial physical evidence. Disassociating remains – such as in Srebrenica, Bosnia in 1995 where mass graves containing the remains of 8,000 Muslim men and boys were exhumed by Serbian nationalists using heavy earthmoving equipment -- prevent investigators from identifying victims by conventional forensic anthropological means (Wagner, 2008).

Finally, states rely on repressive legislation, regulation, intimidation and harassment to reduce the scope and scale of civil society capabilities, with a particular emphasis on human rights defenders and the foreign donors that support them. For example, following a failed coup attempt in Turkey in 2016, the government halted the activities of 370 NGOs, including human rights and children's organizations (Reuters Staff 2016). In China, recent laws stipulate punishments for organizations that "subvert state power" or "incite resistance against enforcement of state law or administrative regulation"(Wang 2015).[11] Similarly, laws in Russia target civil society organizations with links to INGOs (Tufft 2015). In Egypt, the El-Sisi regime launched an unprecedented wave of attacks against civil society (Austin Holmes 2017). New legislation drafted in secret requires civil society organizations to work "within the scope of the state's plans" and effectively gives security authorities oversight over organizations' work and funding. Even before the legislation, NGOs were harassed and intimidated (Loveluck 2013). Even democracies such as India, Spain and Hungary have enacted laws restricting civil society groups (Amnesty International 2015).[12] Many domestic philanthropic sources choose to support charitable and religious activities

---

[10] See also "Training Manual on Human Rights Monitoring - Chapter 8: Interviewing," Human Rights Library, University of Minnesota. http://hrlibrary.umn.edu/monitoring/chapter8.html.

[11] See also Lyudmila Alexeeva, 2013, "Vladimir Putin's goal is to destroy Russian civil society," *The Guardian*, May 24. https://www.theguardian.com/commentisfree/2013/may/24/vladimir-putin-goal-russian-civil-society.

[12] See also Arch Puddington, 2007, *Freedom of Association Under Threat: The New Authoritarians' Offensive Against Civil Society*, Freedom House. https://freedomhouse.org/report/freedom-association-under-threat-new-authoritarians-offensive-against-civil-society/freedom; 2013, "Restrictions on NGOs Threaten Civil Society in India, the World's Largest Democracy," Freedom House. https://freedomhouse.org/article/restrictions-ngos-threaten-civil-society-india-worlds-largest-democracy.

while tending to shy away from supporting human rights organizations, advocacy groups, or other civil society initiatives that promote government accountability (Carothers and Brechenmaker 2014).[13]

These are some of the ways states undermine documentation efforts of human rights groups. Where local civil society groups are allowed to exist and enjoy freedom of movement and association, and where human right investigators have physical access to the site of the abuse, and when evidence is intact and discoverable, conventional models of information exchange between NGOs and INGOs remain practicable. But in limited access areas, where repression of local populations is severe and external investigators' access is limited, and where retrieval of physical evidence using conventional methods is improbable and often impossible, standard models of information exchange are less effective. In these circumstances, information exchange facilitated by several imbricated digital technologies fills some of the void. At the same time, these technologies create a new kind of documentation, one built on precisely quantified scientific data, in addition to (and sometimes instead of) sometimes problematic testimonies offered by eyewitnesses (Rogers 1985).[14]

---

[13] See also Kenneth Roth, 2016, "The Great Civil Society Choke-out," *Foreign Policy*, January 27. http://foreignpolicy.com/2016/01/27/the-great-civil-society-choke-out-human-rights-democracy-india-russia-china-kenya/; 2016, "Activists See Bleak Future For China's NGOs Amid Ongoing Crackdown." Radio Free Asia, January 22. http://www.rfa.org/english/news/china/bleak-01222016113105.html; 2016, "Cambodia: New Wave of Arrests Targeting Human Rights Defenders Threatens to Destroy Vibrant Human Rights Community," World Organization Against Torture. http://www.omct.org/human-rights-defenders/urgent-interventions/cambodia/2016/05/d23755/; Thomas Graham, 2016, "Political Violence Targeting Colombia's Human Rights Workers on the Rise," *Colombia Reports*, April 25. http://colombiareports.com/death-threats-murders-human-rights-activists-rise/; 2015, "Egypt: Year of Abuses Under al-Sisi," Human Rights Watch. https://www.hrw.org/news/2015/06/08/egypt-year-abuses-under-al-sisi; 2014, "Current Threats Facing Human Rights NGOs and Defenders in Central Asia," 2014 OSCE Human Dimension Implementation Meeting, Working sessions 2 and 3, September 23. http://www.osce.org/odihr/124043?download=true; Julie Broome and Iva Dobichina, 2015, "Turning the Tide Against the Wave of Civil Society Repression," International Service for Human Rights. http://www.ishr.ch/news/turning-tide-against-wave-civil-society-repression.

[14] **Saul Kassin, *et al*, 2001 "**On the 'General Acceptance' of Eyewitness Testimony Research: A New Survey of the Experts," *American Psychologist* 56(5): 405–416.

Digital Affordances and Human Rights Monitoring

We organize relevant technologies according to their "affordances" (Gibson 1986).[15] A *digital affordance* is a "type of action or a characteristic of actions that a technology enables through its design" (Earl and Kimport 2011). Online petitions, for example, allow signatures to be collected without the necessity of temporally synchronized physical interactions. In other words, signing a petition no longer requires locating someone with clipboard in hand in a specific place and time. One could apply the same logic to understanding the distinction between hailing a cab that happens to drive by or using a rideshare service using geolocation technology on a smartphone. Similarly, in their study of social movements in the 21st century, W. Lance Bennett and Alexandra Segerberg describe interactive digital affordances that enable different kinds of personal political expressions, such as "features or functionalities (of a website) that enable people to do things pertaining to engagement with the protests beyond the basic affordances of reading web pages or navigating the sites" (Bennett and Segerberg 2013). Digital affordances open new possibilities for realizing outcomes that would otherwise be improbable, and perhaps impossible, in the absence of an enabling technology.

We consider three types of digital affordances:

1. *Geospatial affordances* involve the use of commercial remote sensing satellites, geographical information systems (GIS), unmanned aerial vehicles (UAVs) and geographical positioning satellites (GPS) and receivers to track events on earth, even in the absence of direct physical access. Geospatial affordances provide opportunities for virtual, panoptic, and precisely measured access to limited access areas.

2. *Digital network affordances* involve the use of digital platforms to link individuals in dispersed locations who are working towards a common goal, such as looking for digital evidence of human rights violations. There are two types: First, it often involves *crowdsourcing* the collection of data

[15] See also McGrenere and Ho, "Affordances: Clarifying and Evolving a Concept"; Norman, *The Design of Everyday Things*.

over digital networks or, second, it might involve *social computation*, the analysis of data by volunteers using digital networks.

3. Forensic affordances involve the collection, preservation, examination and analysis of evidence of abuses and crimes for documentation, reconstruction, and understanding for public and court use. Among the more prominent information in this area includes digital and multimedia evidence, as well as corporal and other biologic evidence. When considering the use of digital technologies, we might say that digital forensic science involves the recoding of material objects into binary code. This affordance includes massively parallel DNA sequencing technologies as well as document scanning and data management technologies.

Affordances sometimes overlap, with information gathered by satellite imagery corroborating information gathered from digital networks (and vice-versa), with both corroborating evidence collected by forensic scientists. We rely on assemblage theory below to describe the nature of collaboration across affordances. Each affordance is described in separate sections.

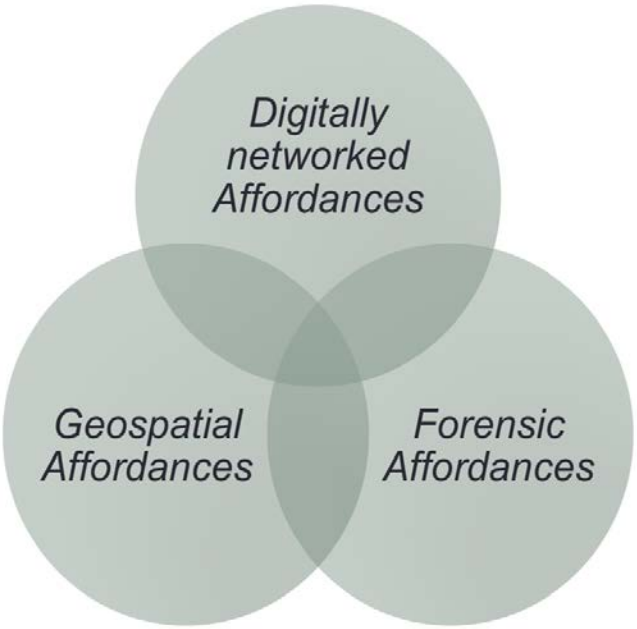

Figure 1: Digital Affordances

Geospatial Affordances

Geospatial Affordances are realized by remote sensing satellites, geographical information systems (GIS), drones and geographical positioning satellites (GPS) and receivers. They enable panoptic awareness and virtual presence, even in limited access areas. With remarkable precision from approximately 600 km in Earth's orbit, commercial remote sensing satellites observe the earth in areas where non-resident observers cannot go because of insurmountable distances and physical dangers.

Since the launch of the world's first commercially owned and operated high-resolution sensing satellite in late 1999, dozens of satellites have been put into orbit by corporations and countries around the globe (Livingston 2015).

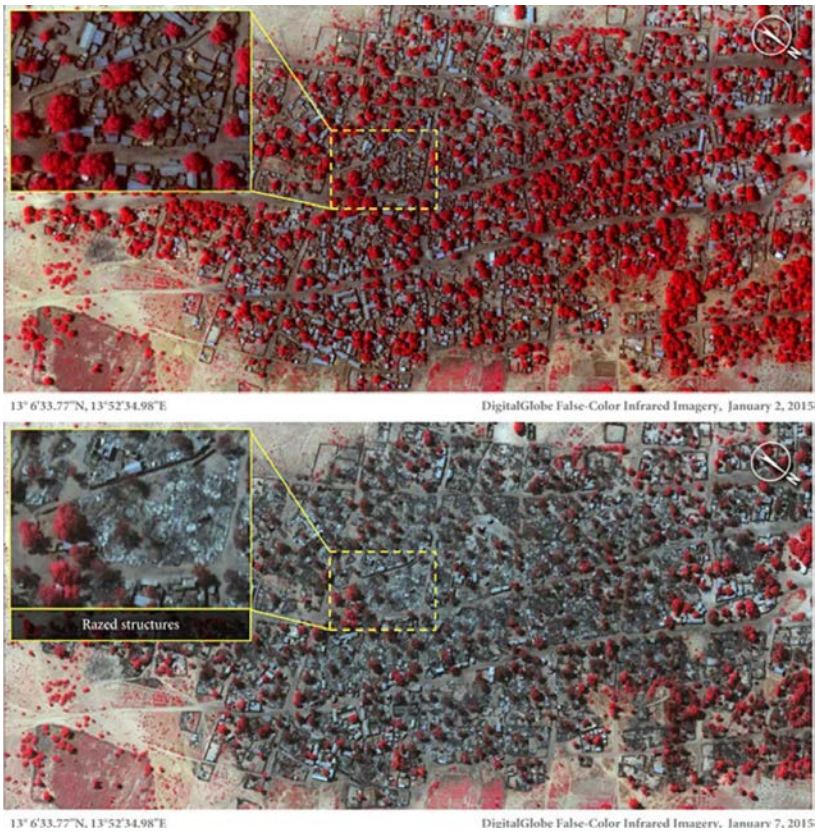

Figure 2: Boko Haram Violence Captured by a DigitalGlobe Satellite

and used by Amnesty International

Source: Amnesty International http://bit.ly/2ovCizw

According to one market analysis, between 2016 - 2025 manufacturers are expected to produce about 1,935 remote sensing satellites for 58 separate programs (Henry 2016). Industry leaders include DigitalGlobe, the European Pléiades satellite constellation, the Indian Cartosat system, BlackSky, Hera Systems, UrtheCast, and Planet Labs.

To speak of one-meter or sub-one-meter resolution satellite imagery is to say that a sensor or camera on a satellite orbiting approximately 400 – 600 miles in space is capable of distinguishing objects on the earth's surface that are one-meter or less in diameter. The current industry standard is DigitalGlobe's WorldView-4 with 30-cm resolution in the panchromatic range. From space, WorldView-4 is capable of distinguishing home plate on a baseball diamond. Spatial resolution is not the only relevant metric for earth observation satellites. Others include spectral resolution and temporal resolution. The former involves varying capacities for recording parts of the electromagnetic spectrum outside of visible light. This is important for distinguishing the material or chemical composition of sensed objects. Temporal resolution measures the interval between revisits to the same spot on the earth by the same or comparable satellite. Generally, shorter revisit intervals are valued for their ability to monitor rapidly changing events. As of this writing, Hera Systems is assembling a constellation of 48 one-meter or less resolution satellites. Another company, BlackSky, plans a constellation of 60 high-resolution satellites by the end of 2019. With so many satellites, the temporal resolution will be measured in hours and spatial resolution in centimeters. In 2018, Planet has a constellation of 149 small earth observation satellites ("cubesats") in orbit, allowing the sensing of the entire earth's surface daily (Schingler 2017).

The cost of imagery, once a barrier to its use by less-well-resourced NGOs, is dropping precipitously. This has opened up the use of high-resolution imagery by human rights groups to monitor and document possible war crimes and abuse, even where investigators on the ground are barred. Figure two, for example, is a DigitalGlobe sub-one-meter image of a village in Northern Nigeria that was partially destroyed by Boko Haram. The upper panel (with a process called false coloration) was taken on January 2, 2015. The cutout showed a cluster of intact dwellings. The lower panel is an image with the same location coordinates taken five days later. The buildings are quite clearly destroyed.

Archived satellite images offer something of a time machine, allowing investigators to

look back on previously undiscovered events.[16] DigitalGlobe's Worldview-4 collects 1,200,000 km^2 of images of the earth each day. The overall capacity to capture and store geospatial data is enormous. Since the start of the Syrian civil war in March 2011 to March 2017, DigitalGlobe collected 11,973,033 square km in its public, time lapsed imagery library. To put that figure in perspective, the total area of the country is 185,180 square km. In that timeframe, the total area of Syria was collected 64.65 times. Archival imagery allows researchers to ask questions such as, "When was the ground first disturbed in what appears to be the digging of mass graves?"

Beginning as early as 2003, human rights organizations began using satellite images on an occasional basis. Then in January 2006, Amnesty International USA launched its "Science for Human Rights" (SHR) initiative.[17] In partnership with the American Association for the Advancement of Science (AAAS), SHR launched with 15 pilot projects involving South Ossetia/Georgia, Chad, Darfur, Eritrea, Pakistan, Somalia, Sri Lanka, Kyrgyzstan, and Nigeria (Amnesty International 2013: 4). The stated objectives of the SHR program align with what we refer to as geospatial affordances: the creation of a panoptic view of otherwise limited access areas. As described by an internal evaluation conducted by the International Secretariat of Amnesty International in London, the SHR program was able to "access areas and information that would have been difficult to collect otherwise in regions such as Darfur, Sri Lanka, South Ossetia and Kyrgyzstan."[18] It also quantified the destruction of infrastructure in several locations that were otherwise out of reach; and it documented the targeting of civilian populations and identified weapons used in Sri Lanka, South Ossetia, Darfur, Kyrgyzstan, and Pakistan. It also identified "official or unofficial graves in Sri Lanka."[19]

The Amnesty International Secretariat evaluation concluded that remote sensing offered access to otherwise closed countries and regions. At the time of the evaluation in 2011, there were 19 closed/limited access countries on Amnesty International's list.[20] In Sri

---

[16] This capacity is not uniform. Some places on the earth are sensed on a much more regular basis than are others. Also, cloud cover is more common over some areas, making it less likely to locate an archived image of the place and time of interest that is free of clouds.

[17] It was first known as "Satellites for Human Rights."

[18] "Technologies for Human Rights," p. 14.

[19] "Technologies for Human Rights," p. 14.

[20] "Technologies for Human Rights," p. 28.

Lanka, for example, aid agencies, journalists, and human rights investigators were denied full access to the conflict zones and displaced person's camps. Kyrgyzstan offered another example of a limited access area. The evaluation report quotes one researcher's reflections on the challenges of gaining access. "It's very expensive to go and it's far away . . . ideally we'd go twice a year, but we don't always manage because there's other countries in Central Asia as well that we go to visit and we have a very small budget."[21] In the case of Eritrea, one of the most repressive countries in the world, at the time of the report Amnesty hadn't conducted an in-country investigation since 1999. The International Secretariat evaluation concluded that the SHR program "opened access to many countries in which Amnesty had hitherto very limited or no access and the tools allowed Amnesty International to cover greater ground than traditional methods of research."[22]

Other examples include AIUSA's use of satellites to document Boko Haram's destruction of 3,700 buildings and the deaths of hundreds if not thousands of persons in the first week of January 2015 (Amnesty International 2015a). In January 2016, AI released a report detailing the discovery of a mass grave on the outskirts of Bujumbura, Burundi (Amnesty International 2016). On December 15, 2015, Nigerian soldiers opened fire on residents of the city of Zaria. Over the next two days, they killed at least 350 of its residents. AI documented the attacks using, in part, satellite images showing mass graves (Amnesty International 2016a). In September 2014, the Kremlin denied any involvement in the fighting in Ukraine. Yet analysis of satellite imagery and testimony gathered by AI provided compelling evidence that the Kremlin was not telling the truth (Amnesty International 2014).

Despite the benefits satellites offer human rights investigations, there are shortfalls. Obviously, satellites cannot monitor torture behind prison walls or catch all arbitrary detentions and extrajudicial killings. It is limited to gathering evidence associated with mass exterminations, forced migration, and the destruction of physical infrastructure and crops. Also, determining that a mass grave is located somewhere in the world does not necessarily tell us much about the victims or much at all about those who gave the orders or pulled the triggers, though other digital technologies sometimes do.

---

[21] "Technologies for Human Rights," p. 28.

[22] "Technologies for Human Rights," p. 28.

Digitally Networked Affordances

Digital network affordances allow coordinated actions toward a common goal without individual "copresence" in physical time and space. Individuals linked by their respective engagement with one or more digital platforms (such as Facebook, Twitter, or purpose-built website) contribute to the realization of a common goal without a common physical location or temporal point of engagement (Earl and Kimport 2011). Copresence on a digital platform can involve either 1) problem-solving or data analysis initiatives or 2) crowdsourcing information. In the first instance, sometimes called social computation, small, incremental taskings that contribute to the analysis of large, complex problems are performed by a multitude of networked volunteers accessing a shared digital platform. On digital platforms, individual costs per task are kept low and sometimes even made to be entertaining, such as when tasks are put in a game format (Burke 2014). If not entertaining, a sense of virtue and accomplishment is thought to motivate those who participate in online activities of this sort (Benkler 2006).

Examples of crowdsourced data analysis would include Tomnod, a social computation platform hosted by DigitalGlobe, the remote sensing satellite company. Volunteers are invited to scan satellite images for evidence of various kinds of events or processes.

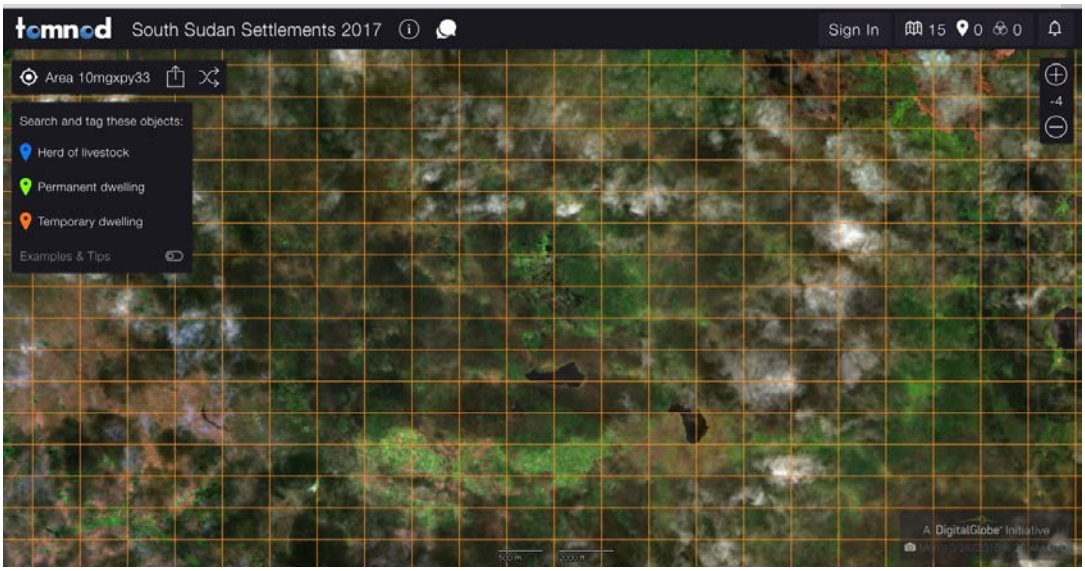

Figure 3: Tomnod project to Identify Features in South Sudan

Source: Tomnod.

Figure three is a Tomnod project that invites volunteers to find permanent and temporary dwelling in DigitalGlobe imagery of South Sudan. Users can zoom in to each of the grid squares (found in the screenshot above) to see a high-resolution image of the terrain captured within the grid. Each square represents just a small area of land so as to not overburden the volunteer. There have been several high-profile Tomnod projects, including an effort in 2014 to find evidence relating to Malaysia Airlines flight 370 that vanished without a trace over the Indian Ocean. Over 8 million people used the site to look for signs of wreckage (Fishwick 2014). Similarly, Foldit is a gamified digital platform that invites "players" to analyze proteins to see how amino acids interact. Zooniverse is one of the more popular platforms for a variety of citizen-science or participatory science collaborations.[23] These and many other examples of "citizen science" rely on the existence of digital platforms (such as a website) and massively distributed incremental tasks that invite contributions by mostly amateur volunteers (Franzoni and Sauermann 2014).

With respect to crowdsourced human right monitoring on digital networks, prime examples would include Humanitarian Tracker. Using crowdsourced text, and photo and video reports, Syria Tracker creates a "live map" of the Syrian conflict (Humanitarian Tracker 2017). In figure 4, a screenshot of the Syria map in April 2017, one sees red dots with varying numerical values. The totals within each dot represent the number of reports – data inputs – for that specific geographical location. Each report is filtered according to categories of specific kinds of events: killings, missing people, rape, use of chemical weapons, and refugees. When online, one can zoom in on a location and see the reports disaggregate into more precise geographical spaces. Eventually, one is taken to individual reports. As of November 2016, only 6% of the 150,000 crowd sourced reports had been included on the map. This low percentage underscores the strict standards for determining the validity of crowdsourced information received by Syria Tracker. It even helped report 47 massacres not recorded by the media or other humanitarian organizations (Livingston and Raman, 2016).

[23] "Projects," Zooniverse, https://www.zooniverse.org/projects?page=1&sort=-activity.

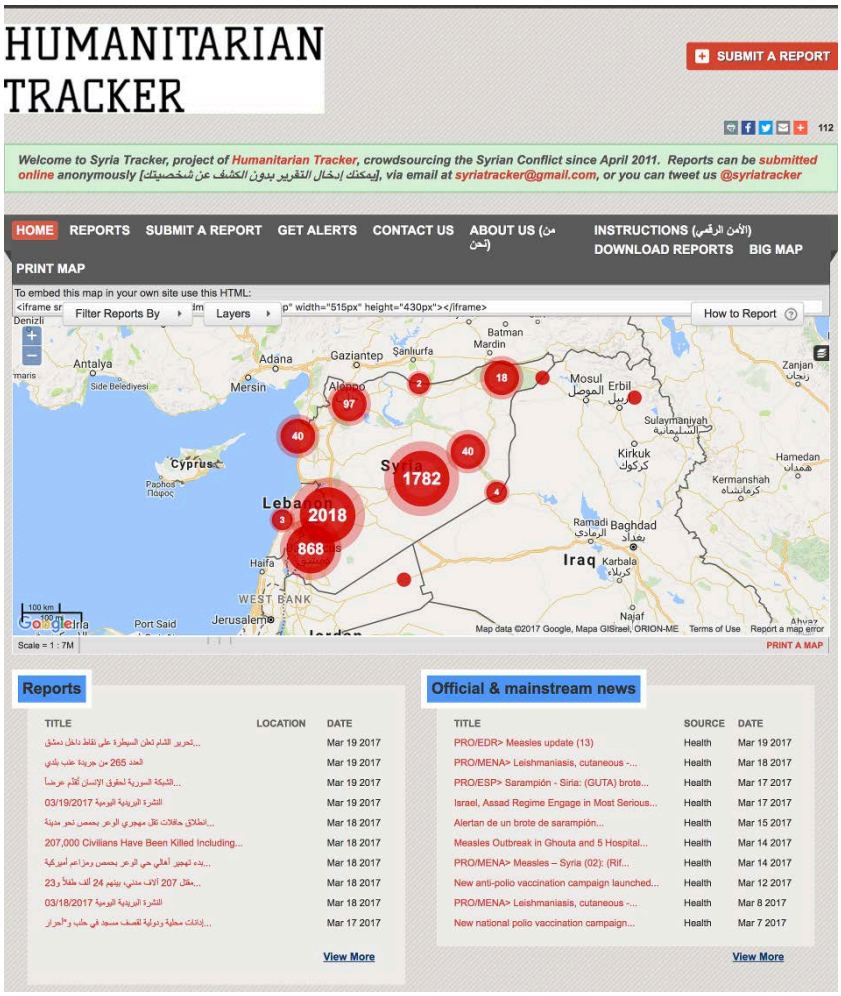

Figure 4: Humanitarian Tracker
Source: Humanitarian Tracker, April 19, 2017.
https://www.humanitariantracker.org/syria-tracker

Remote sensing satellites allow human rights groups to *look in* on a limited access area while digital networks allow those inside conflict zones and other limited access areas to *reach out* to human rights organizations. They provide fragments of information, a picture, tweet, or text that is stitched together with other fragments of information and arrayed on a GIS platform to present a panoptic view of events occurring in an area otherwise out of the reach of conventional investigations.

Forensic Affordances

One possible dimension of a limited access area involves the attempted obliteration of evidence. Investigators might well be allowed to investigate an alleged war crime or abuse, but only after a concerted effort has been made to destroy evidence. Digital forensic affordances involve the collection, analysis, and preservation of evidence of abuses and crimes, even in the face of efforts to extirpate it. When considering the use of digital technologies, we might also say that forensic science involves the recoding of material objects into binary code. This affordance includes massively parallel DNA sequencing technologies as well as document scanning and data management technologies.

Archival forensics involves the curation of documents related to human rights investigations (Doyle 2005). As understood here, digital archival forensics involves the use of optical scanners to reconstitute analogue content (paper and photographs) into binary code. Once digitized, the information is shielded from physical deterioration and destruction as it is encrypted and stored on servers located in third party countries. Perhaps the best example of digital archival forensics is the Guatemalan National Police Historical Archive.[24] Digitized archives are also machine readable, opening complex network analyses of key words and names found in sometimes millions of pages of documents. This allows researchers to find otherwise undiscoverable patterns in data (Weld 2014).

A second manifestation of forensic affordances involves scientists who work to identify human remains and establish the cause and circumstances of death. By examining the skeletal remains found in single and mass graves, forensic anthropologists and odontology have played a central role in identifying the remains of those who have been "disappeared" and massacre victims since the 1980s. Yet because the physical integrity of human remains is often deliberately undermined, forensic scientists have turned to DNA matching to identify remains. By matching the DNA taken from the remains of the victim to his or her close relatives, or to a DNA sample taken from a personal item

[24] See, for example "AHPN: Digital Archives of the Guatemalan National Police Historical Archive," University of Texas Libraries. https://ahpn.lib.utexas.edu

(hairbrush or toothbrush, for example) of the victim, his or her identity can be established within known probability parameters.

With the creation of specially designed microprocessing chips, Next-Generation Sequencing (NGS) or massively parallel DNA sequencing largely replaced the Sanger method of DNA sequencing (Jennings and Maxmen 2013). One of the sequencing machines is described as combining "semiconductor sequencing technology with natural biochemistry to translate chemical information into digital data, democratizing sequencing and making it accessible to virtually any lab or clinic" (Illumina 2017). By the late 1980s, a bio-electronics firm called Applied Biosystems introduced the first automated sequencing instruments. Though regarded as high throughput machine at the time, in 2005 a new generation of technology emerged that took sequencing runs from 84 kilobase to 1 gigabase per run (Illumina 2017). From 2005 onward, data output from sequencing instruments has outpaced Moore's Law.

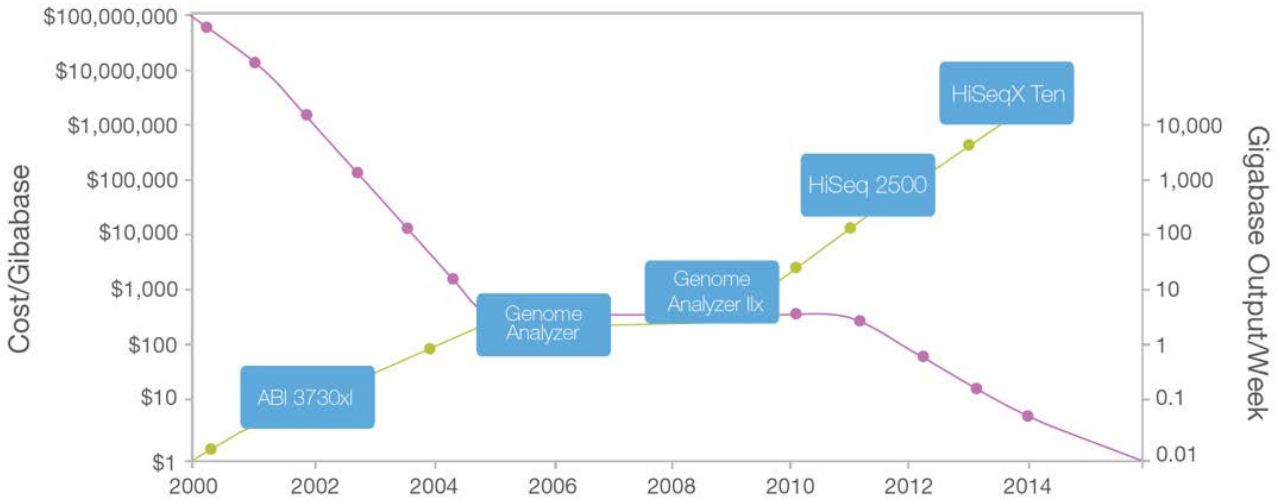

Figure 5: Sequencing Cost and Data Output Since 2000

Source: Illumina

Perhaps of greatest importance to human rights investigations is the ability of new digital sequencers to successfully analyze small and damaged samples. As a senior research scientist at the Armed Forces DNA Identification Laboratory (AFDIL), notes, "for specific applications at AFDIL, NGS (next generation sequencing) is currently the only way to get sequencing information from DNA that is degraded to less than 100 base pairs, since Sanger sequencing is not easily amenable to such small fragments" (Melton 2014). In 2016, researchers at the Institute of Legal Medicine, Medical University of

Innsbruck adapted a DNA sequencing technology known as Primer Extension Capture Massively Parallel Sequencing (PEC MPS). It was used to identify some of the remains of 43 Mexican students thought to have been assassinated by government police forces. "The scientists demonstrated that this method enables identification of biological material that is too damaged for conventional forensic DNA analysis" (Institut für Gerichtliche Medizin 2016).[25] Sequencing technology is making it difficult for repressive states and violent nonstate actors to conceal atrocities.

The three digital affordances described above sometimes overlap, producing data streams that allow for testing and probing of evidence from across all three affordances. We explore the nature of affordance overlap in the next section.

Overlapping Affordances in Human Rights Investigations

Human rights organizations leverage digital affordances to investigate potential war crimes and abuse in limited access areas. At times, two or three affordances converge on a single investigation. In Figure One, imbricated affordances are illustrated by overlapping areas of a Venn diagram. Analogous to shingles on a roof, imbricated affordances reinforce one another to produce a sum that is greater than the individual parts. Analyzing satellite imagery, for example, is less reliable in the absence of a method for "groundtruthing" the conclusions. Groundtruthing is taking in situ measurements of ground features and comparing them with satellite image data. By definition, in a limited access area this is impossible. When direct access is limited, metadata from a mobile phone photo of the same spot might suffice, especially if the data include the time and coordinates of the photograph. Here, a geospatial affordance of the satellite image is supported by a digital network affordance (local mobile telephony cellular network and broadband connectivity that facilitates crowdsourcing). Affordances are greatest when they work together to probe hunches, unearth clues, and confirm (or disconfirm) expectations. Yet collaboration among different technical and scientific communities is not seamless. Conflicting professional norms, operating tempos, and dissimilar technical language hinders collaboration.

[25] See also R. Scheithauer, 2014, "Expert Opinion on DNA Analyses," Gerichtsärzte am Institut für Gerichtliche Medizin; Azam Ahmed and Paulina Villegas, 2016, "Investigators Say Mexico Has Thwarted Efforts to Solve Students' Disappearance," *The New York Times*, April 22. http://www.nytimes.com/2016/04/23/world/americas/investigators-say-mexico-has-thwarted-efforts-to-solve-students-disappearance.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=first-column-region&region=top-news&WT.nav=top-news.

Affordances are not realized by digital instruments alone; the technical and scientific skills of professionals working in separate rarified communities of practice are central to their realization. People working together in a shared professional undertaking constitute a community of practice: people who "share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott, and Snyder 2002: 4). Over time, communities of practice develop unique perspectives and a shared body of knowledge concerning their area of expertise and interest. They might even establish clubs and professional associations, create professional ethical standards, and establish credentialing criteria. Individual reputations emerge from shared experiences in the community. Awards are presented for exceptional conduct in accordance with professional standards and expectations. Because professional reputations are important for both material and psychological reasons, they are protected from sustained violations by disciplinary procedures and ethics review boards. The same standards can be applied to entire organizations (Waeraas and Maor 2015).

While professionals from each of the affordances we have discussed shared common values and use a common discourse about the importance of human rights, as members of a profession, differences in professional norms and standards create frictions that impede collaboration. Forensic scientists, for example, place a particularly high premium on data security and privacy. DNA reveals deeply personal information, not only about an individual but also about his or her entire family across generations. Privacy concerns are certainly also present in digital network affordances, though not in the same way as in DNA sequencing. Metadata in text messages and photographs sent to a crowdsourcing initiative can reveal personal information about the sender which, should it be intercepted by state authorities, could put him or her in great danger. But the threat is often limited in scope to that one person. NGOs such as Witness, Human Rights Watch, and Amnesty International exercise considerable caution in the use of crowdsourced data.

In the case of geospatial affordances, *individual* privacy is generally not an issue. Even at the highest resolution, satellite images do not directly reveal personal identities. No single privacy standard exists across all three affordances, or even among professional practices found within a given affordance. That means information sharing across affordances is sometimes fraught with tensions and tradeoffs.

Privacy is just one example of the several potential sources of friction present in collaborations among affordances. Differing work tempos, levels of professional status associated with an affordance skill-set, legal contexts (with for example DNA sequencing typically situated in a formal criminal investigation), and variance in opportunities for cross-fertilization of skills and awareness of potential benefits all affect collaboration, as does the naturalness of the fit between or among the affordances. Geospatial and digital network affordances often have baked-in points of collaboration. For example, Amnesty International's Decode Darfur initiative leverages digital network affordances to socially compute satellite imagery, a geospatial affordance. The same is true of Tomnod and Syria Tracker. Forensic affordances also make use of digital network and geospatial affordances, but in ways that are not as tightly entwined with one another.

Networks and Assemblages

How then do we conceptualize the push and pull of collaboration among affordances? The analytical utility of formal network theory for understanding the role of digital technology in human rights advocacy offers one potential approach. Even before the advent of the World Wide Web, transnational advocacy scholars used network theory to understand the dynamics of human rights investigations. Keck and Sikkink (1998) characterized transnational advocacy networks as "voluntary, reciprocal, and horizontal patterns of exchange of information and services" among mostly formal organizations.[26] They consist of local NGOs, INGOs such as Amnesty International, and international organizations such as the United Nations, and parts of state ministries (Keck and Sikkink 1998).

Since the emergence of the Web, TANs analyses have shifted from a consideration of networks in physical space to the nature of networks in digital space. For example, Carpenter argues that a human rights organization's position among other organizations in digital space is indicative of its relative strength in agenda-setting dynamics (2014, 2007). Center hub positions indicate (and by implication provide) a dominant agenda-setting role, with other less centrally-positioned organizations weaker and left to curry favor of the more powerful ones (D'Andrea, Ferri, and Griffoni 2010).

[26] See also Emilie M. Hafner-Burton, Miles Kahler, and Alexander H. Montgomery, 2009, "Network Analysis for International Relations," *International Organization* 63: 559–592.

Not only does technology affect the agenda-setting capacity of human rights organizations, as Carpenter argues, it also affects what we mean when we speak of an organization. Digital technology enables quasi-organizational morphologies. In their exploration of digitally-enabled protest actions, for example, Bennett and Segerberg (2013) note that "organizational hybridity makes it difficult to apply fixed categories to many organizations as they variously shift from being issue advocacy NGOs to policy think tanks," to other organizational morphologies altogether. While network analysis as Keck and Sikkink (1998) understand it in physical space, or as Carpenter understands it in digital space, explain some parts of transnational or global advocacy, we assert that a different concept is needed to capture the dynamic nature of digital affordances and social organization in human rights advocacy and documentation.

Bruno Latour's actor-network theory asserts that what appears to be natural distinctions between nature and society are in fact artificial. Similar to Actor-network theory is the concept of an *assemblage*: an ephemeral and fluid collection of relations between heterogeneous entities. The English word "assemblage" fails to capture the original French word "agencement." *Agencement* refers to "the action of matching or fitting together a set of components (*agencer*), as well as to the result of such an action: an ensemble of parts that mesh together well" (DeLanda 2016). It is both a verb and a noun, a process and an outcome. It also involves organizational hybridity and is ontologically associated with "flux, in-betweenness, the interstitial, and the liminal" (Chadwick 2013: 8). The point here is that organizational morphologies and collaborations are now more fluid in nature, owing to their digital ontology. Nonhuman "actants" have a "form of agency that emerges, not from the intrinsic capacity of nonhuman 'things' to act alone, but rather from these things' interdependent interactions with other resources— both technological and human— in a given sociotechnical system" (Chadwick 2013: 4). Actor-network theory "enables us to identify sociotechnical systems whose functioning depends upon the intermingled agencies of the social and the technological" (Chadwick 2013: 4). Explaining the nature of affordance interaction requires us to see technical and human systems as blended and merged in shifting patterns over time.

Either actor-network theory or assemblage theory have been used by scholars to explore the varied social and technological aspects of social movements, journalism and political campaigning (Binber, Flanagin, and Stohl 2012). Rasmus Kleis Nielsen (2012: 20) notes that a political campaign assemblage is not "a thing 'out there' in the sense that a human being is, but rather a name for a combination of technologically augmented organizations, groups, and individuals whose combined capacities for action are brought

to bear on a shared project." Like war crimes and human rights documentation initiatives, elections campaigns appear from a distance to be monolithic and hierarchical, though upon closer inspection are revealed to be "composites of temporary campaign organizations, durable allied organizations, and hundreds or even thousands of individual volunteers and part-timers enrolled for the duration of the project" (Nielsen 2012:21). There are "permeable boundaries between different modular units of any given collective endeavor, and the meaning and force of any individual modular unit— whether it be a technology, a frame, a message, and so on— of that endeavor can only be understood in terms of its relations with other modular units" (Chadwick 2013: 63; Müller and Schurr 2016).

Syria Tracker, or any of digital network affordance, offers an example. It is a blend of formal institutions, firms such as DigitalGlobe; server farms that store the data; Ushahidi, the open-source GIS mapping platform; individual volunteers who curate the site; and the thousands of individuals who volunteer to send messages, pictures, and video; the other news organizations and their own assemblage of reporters, sources, stringers who produce news stories that are also used to populate the platform. It also includes state agency and technical functions, such as GPS. The constituent elements of information exchange go well beyond the list of formal organizations identified, for example, by Keck and Sikkink in 1998. Similarly, while Amnesty International is the world's largest and most well resourced human rights organization, Decode Darfur consists of thousands of volunteers who analyze thousands of small snippets of a large, unstructured dataset that has been produced by a satellite image provider that is itself an assemblage of technicians, other companies and earth receiving stations found scattered around the globe. The thousands of volunteers to any one of the many crowdsourcing platforms in existence to document war crimes and abuses offers another example. Often, with crowdsourcing platforms, the "volunteers" are not even aware of their contribution. They merely want to share what they see as a meaningful video or photograph on social media. The collection of images and other snippets of information constitute a virtual, hybrid fact-finding investigation.

With a focus on affordances and assemblage theory, new questions and definitions emerge. What is meant by a human rights organization is opened up. If one says that a human rights organization is defined functionally, that it collects and exchanges information germane to an investigation of a potential war crime or pattern of abuse, and that its purpose it to use information to alter the behavior of powerful political actors who fail to comply with broadly shared norms, one would of course include conventional human rights organizations. But it also seems that less conventional virtual organizations could be included, too. Twitter hashtags that focus on particular events, Facebook pages that are devoted to chronicling abuse (see "We are all Khalid

Said"), or citizen journalism sites such as Bellingcat or the Conflict Intelligence Team, the Atlantic Council's Digital Forensic Research Lab, or Forensic Architecture are also properly understood as human rights organizations (even though they themselves might not agree with the designation).[27] All of them are assemblages of human and nonhuman or technical elements that gather, analyze (with both human and nonhuman capabilities) information that is then shared (exchanged) widely using conventional and digital media, or what Chadwick calls hybrid media. Information exchange and organizations are fluid blends of human and technical capacities.

Conclusions: Challenges and Ethical Dilemmas with Digital Affordances

We have argued that conventional documentation efforts undertaken by human rights investigators are often limited by a number of factors. In such limited access areas, a variety of digital affordances overcome the deliberate denial of information. Affordances are realized by both technological capabilities and professional practices. Technology, skilled professionals, amateurs, and gamers creating shifting assemblages that exchange information about potential war crimes and human rights abuses. Still, the rise of digital affordances raises a number of concerns.

Digital affordances increase reliance on private corporations for development and use of new technology and access and analysis of data. This core development carries significant ethical concerns. For example, Silicon Valley-based company Palantir offers technical support to the Carter Center's Syria Conflict Mapping Project.[28] According to the Carter Center, its Syria map "uses open source data, created by the Carter Center and integrated and analyzed in Palantir to show how the conflict in Syria has evolved

[27] See, for example, "We are all Khalid Said," Facebook, https://www.facebook.com/elshaheeed.co.uk; "Home," Bellingcat, https://www.bellingcat.com; "Home," Conflict Intelligence Team, https://citeam.org; "Home," Digital Forensics Research Lab, The Atlantic Council, https://www.digitalsherlocks.org; "Home," Forensic Architecture, http://www.forensic-architecture.org.

[28] For more, see "Tracking the Front Lines in Syria," The Carr Center, https://d3svb6mundity5.cloudfront.net/dashboard/index.html.

over time."[29] International humanitarian organization Mercy Corps (2015) also uses Palantir technical services to develop data driven early warning systems, assess refugee flows, plan ahead for its relief efforts, and prioritize communities for humanitarian aid, while anti-trafficking group Polaris works with Palantir to monitor and analyze calls from trafficking victims in order to track down trafficking kingpins (Kendall 2016). Palantir, however, has been described as "one of the most secretive start-ups in Silicon Valley," with government clients such as the CIA, FBI, and Department of Defense, and annual revenue of $150 billion in 2015 (Levy 2016). Civil society organizations and transnational advocacy networks obtain their legitimacy through various sources: their mission, their accountability to constituencies and communities, and their commitment to the public good. An over-reliance on private, for-profit businesses that are working hand-in-hand with national security and intelligence agencies can raise questions about the independence, legitimacy, and accountability of such human rights organizations.

Secondly, relying on digital affordances can affect issue adoption and emergence by skewing investigator's attention to issues and regions of strategic interest to technology providers, or simply to where data can be obtained. For example, commercial satellite imagery skews attention toward parts of the world where weather and terrain (mostly treeless areas) are accessible to imaging. And while the reach of digital networking platforms and mobile telephony expands with each passing month, there are still parts of the globe that remains largely off the grid. Similarly, digital network affordances usually presuppose at least 3-G (Internet enabled) mobile telephony and sufficient connectivity to a cellular network to send pictures. As of this writing, that is not found in all places on earth.

A reliance on digital affordances might also increase the gap between transnational advocacy networks and INGOs versus local NGOs that may not have the technical and financial capacity to fund and manage such data projects. Groups that already serve as gatekeepers may consolidate this role further through their technological capacity and their ability to capture philanthropic giving for this purpose.

Finally, datafication – the quantification of spatial, genetic, and social relationships – might rob human rights investigations of some part of their human quality. Sally Engle Merry (2016: 3) has argued that quantification in human rights work is seductive but

[29] Ibid.

potentially harmful. It provides knowledge that is "decontextualized, homogenized, and remote from local systems of meaning." For example, the satellite images of homes destroyed in northern Nigeria by Boko Haram document the event through an analysis of structural damage. Nothing is revealed about the people who once lived in them.

What have we learned? We have argued that legacy human rights advocacy research has often relied on the existence of a unique political and security circumstance: It assumes human rights violations occur in places that are threating enough to produce violations but sufficiently benign for access by human rights fact-finding teams. Argentina and Chile in the 1970s and 1980s are archetypes of this condition. Yet Syria, northern Nigeria, Democratic Republic of the Congo and many other locations in the 21st century illustrate the rarity of such benign conditions. Limited access areas invite the use of digital affordances that allow for remote access to dangerous places or to the reconstitution of identity as binary code. The human and technical elements of overlapping affordances are best thought of in terms of assemblages, hybrid virtual organizations that evolve over time from one investigation to the next. Future research should focus on the evolving capacities and limitations of affordances and on the nature of human rights assemblages.

Finally, future research must consider the use of some of the same affordances identified in the paper for pushback by states accused of war crimes and abuse. For example, the Russian troll factory and state-sponsored media channels such as RT and news agencies such as Sputnik focus ad hominem attacks and disinformation campaigns against human rights organizations and other NGOs. Not only are digital technologies used to expose abuses, they are also used by perpetrators to obfuscate and avoid responsibility (Livingston 2017).[30] This, too, must be examined and understood.

[30] See also Ben Nimmo, 2017, "Blowing the Whistle on Sputnik," Digital Forensic Research Lab, The Atlantic Council, https://medium.com/dfrlab/blowing-the-whistle-on-sputnik-493e0bc26e99.

Bibliography

"AHPN: Digital Archives of the Guatemalan National Policy Historical Archive." University of Texas Libraries. https://ahpn.lib.utexas.edu.

"Documenting the Crisis." Satellite Sentinel Project. http://www.satsentinel.org/documenting-the-crisis.

"Home." Bellingcat. https://www.bellingcat.com/.

"Home." Conflict Intelligence Team. https://citeam.org/.

"Home." Crowd4Sat. http://www.crowd4sat.eu.

"Home." Digital Forensics Research Lab. The Atlantic Council. https://www.digitalsherlocks.org/.

"Home." Forensics Architecture. http://www.forensic-architecture.org/.

"Home." Standby Task Force. http://www.standbytaskforce.org/.

"Home." Tomnod. http://www.tomnod.com/.

"Interactive Maps and Charts of Armed Violence Indicators." *Small Arms Survey*. The Geneva Graduate Institute for International Studies and Development. http://www.smallarmssurvey.org/tools/interactive-map-charts-on-armed-violence.html.

"International Human Rights Fact-Finding Guidelines (The Lund-London Guidelines)." The International Bar Association. Pg. 8. http://www.ibanet.org/Fact_Finding_Guidelines.aspx.

"Portal." FoldIt. https://fold.it/portal/.

"Tracking the Front Lines in Syria." The Carter Center. https://d3svb6mundity5.cloudfront.net/dashboard/index.html

"We are all Khalid Said." Facebook. https://www.facebook.com/elshaheeed.co.uk.

2016. "Successful DNA analyses on missing Mexican remains." Institut für Gerichtliche Medizin. http://www.forensicmag.com/article/2014/01/digging-deep-next-generation-sequencing-mitochondrial-dna-forensics.

2006. "Community Demolitions in Zimbabwe." American Association for the Advancement of Science (AAAS). http://www.aaas.org/page/zimbabwe.

2011. "Technology for Human Rights – Evaluation of the Science for Human Rights Project 2008-2011." Amnesty International. https://www.amnesty.org/en/documents/doc23/002/2011/en/.

2013. "Claims of Witnesses in Kenya ICC Trial 'Disappearing.'" BBC, February 8. http://www.bbc.com/news/world-africa-21382339.

2013. "Restrictions on NGOs Threaten Civil Society in India, the World's Largest Democracy." Freedom House. https://freedomhouse.org/article/restrictions-ngos-threaten-civil-society-india-worlds-largest-democracy.

2014. "Current Threats Facing Human Rights NGOs and Defenders in Central Asia." 2014 OSCE Human Dimension Implementation Meeting, Working sessions 2 and 3, September 23. http://www.osce.org/odihr/124043?download=true.

2014. *Identifying the Culprit: Assessing Eyewitness Identification*. National Academies of Sciences, Engineering, and Medicine. https://www.nap.edu/read/18891/chapter/1.

2014. "There Are No Investigations Here." Human Rights Watch. https://www.hrw.org/report/2014/02/12/there-are-no-investigations-here/impunity-killings-and-other-abuses-bajo-aguan.

2014. "Ukraine: Mounting Evidence of War Crimes and Russian Involvement." Amnesty International. https://www.amnesty.org/en/latest/news/2014/09/ukraine-mounting-evidence-war-crimes-and-russian-involvement/.

2015. “Conflict Barometer.” Heidelberg Institute for International Conflict Research. https://hiik.23degree.org/#/conflict/index/nation/IQ.

2015. “Delivering Aid in Syria.” Mercy Corps. https://www.palantir.com/philanthropy-engineering/annual-report/2016/mercy-corps/.

2015. “Egypt: Year of Abuses Under al-Sisi,” Human Rights Watch. https://www.hrw.org/news/2015/06/08/egypt-year-abuses-under-al-sisi.

2015. “Kenya 'ICC Defense Witness' in Ruto's Trial Killed.” BBC, January 6. http://www.bbc.com/news/world-africa-30703876.

2015a. “Nigeria: Satellite Images Show Horrific Scale of Boko Haram Attack on Baga.” Amnesty International. https://www.amnesty.org/en/latest/news/2015/01/nigeria-satellite-images-show-horrific-scale-boko-haram-attack-baga/.

2015. “Their Backs to the Wall: Civil Society Under Pressure in Hungary.” Amnesty International. https://www.amnesty.ch/de/laender/europa-zentralasien/ungarn/dok/2015/hexenjagd-auf-ungarns-ngos/their-backs-to-the-wall-civil-society-under-pressure-in-hungary-1.

2016. “Activists See Bleak Future For China's NGOs Amid Ongoing Crackdown.” Radio Free Asia, January 22. http://www.rfa.org/english/news/china/bleak-01222016113105.html.

2016. “Alert regarding the escalation of aggressions against human rights defenders.” International Federation for Human Rights. https://www.fidh.org/en/issues/human-rights-defenders/guatemala-alert-regarding-the-escalation-of-aggressions-against-human#.

2016. “Burundi bars UN investigators over report on human rights abuses.” BBC, October 11. http://www.bbc.com/news/world-africa-37614790.

2016. “Burundi: Satellite Evidence Supports Witness Accounts of Mass Graves.” Amnesty International. https://www.amnesty.org/en/latest/news/2016/01/burundi-satellite-evidence-supports-witness-accounts-of-mass-graves/.

2016. “Burundi: UN investigation urges strong action in light of gross, widespread and systemic human rights violations.” United Nations Human Rights Office of the High Commissioner. http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=20534&LangID=E.

2016. “Cambodia: New Wave of Arrests Targeting Human Rights Defenders Threatens to Destroy Vibrant Human Rights Community.” World Organization Against Torture. http://www.omct.org/human-rights-defenders/urgent-interventions/cambodia/2016/05/d23755/.

2016. “Honduras, one of the most dangerous countries for human rights defenders – Experts warn.” UN High Commissioner for Human Rights. http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=20397&LangID=E.

2016. “Nigeria: Military Cover-up of Mass Slaughter at Zaria Exposed.” Amnesty International. https://www.amnesty.org/en/latest/news/2016/04/nigeria-military-cover-up-of-mass-slaughter-at-zaria-exposed/.

2016. “Uppsala Conflict Data Program.” http://www.ucdp.uu.se/#/exploratory.

2017. “About our Research.” Human Rights Watch. https://www.hrw.org/about-our-research#4.

2017. “An Introduction to Next-Generation Sequencing Technology.” Illumina. www.illumina.com/technology/next-generation-sequencing.html.

2017a. “Bahrain Denies Entry to Human Rights Watch Representative.” Human Rights Watch. https://www.hrw.org/news/2017/05/10/bahrain-denies-entry-human-rights-watch-representative.

2017. “Director of Amnesty International Turkey must be released from incommunicado detention.” Amnesty International. https://www.amnesty.org/en/latest/news/2017/07/director-of-amnesty-international-turkey-must-be-released-from-incommunicado-detention/.

2017. “Home.” GMSA Intelligence. https://www.gsmaintelligence.com.

2017. “Home.” Iceye. https://www.iceye.fi.

2017. “Home.” UrtheCast. https://www.urthecast.com.

2017. “Internet of Things.” National Science Foundation. https://seedfund.nsf.gov/topics/internet-of-things/.

2017. “Syria Tracker.” Humanitarian Tracker. http://www.humanitariantracker.org/#!syria-tracker/cj00.

2017. “Technology.” Capella Space. http://www.capellaspace.com/#section-technology.

Ahmed, Azam and Paulina Villegas. 2016. “Investigators Say Mexico Has Thwarted Efforts to Solve Students’ Disappearances.” *The New York Times*, April 22. https://www.nytimes.com/2016/04/23/world/americas/investigators-say-mexico-has-thwarted-efforts-to-solve-students-disappearance.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=first-column-region&region=top-news&WT.nav=top-news.

Alexeeva, Lyudmila. 2013. “Vladimir Putin's goal is to destroy Russian civil society.” *The Guardian*, May 24. https://www.theguardian.com/commentisfree/2013/may/24/vladimir-putin-goal-russian-civil-society.

Amanpour, Christiane. 2017. “Duterte's War on Drugs; Human Rights Watch on the World's Abuses; Imagine a World.” CNN Transcripts, February 27. http://transcripts.cnn.com/TRANSCRIPTS/1702/27/ampr.01.html.

Anderson, Scott. 2014. “Life in the Valley of Death.” *The New York Times Magazine*, May 28.

Austin Holmes, Amy. 2017. “The Attack on Civil Society Outside Cairo.” Carnegie Endowment for Human Rights. http://carnegieendowment.org/sada/67810.

Benkler, Yochai. 2006. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven, CT: Yale University Press.

Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press.

Bennett, W. Lance and Alexandra Segerberg. 2013. *The Logic of Connective Action*. New York, NY: Cambridge University Press.

Bimber, Bruce, Andrew Flanagin, and Cynthia Stohl. 2012. *Collective Action in Organizations: Interaction and Engagement in an Era of Technological Change*. New York, NY: Cambridge University Press.

Boutruche, Theo. 2016. “The Relationship Between Fact-Finders and Witnesses in Human Rights Fact-Finding.” In *The Transformation of Human Rights Fact-Finding*, edited by Philip Alston and Sarah Knuckey, 131–154. New York, NY: Oxford University Press.

Braidotti, Rosi. 2006. “Post-Human, All Too Human: Towards a New Process Ontology.” *Theory, Culture & Society* 23: 197–208.

Broome, Julie and Iva Dobichina. 2015. “Turning the Tide Against the Wave of Civil Society Repression.” International Service for Human Rights. http://www.ishr.ch/news/turning-tide-against-wave-civil-society-repression.

Burgerman, Susan. 2001. *Moral Victories: How Activists Provoke Multilateral Action*. Ithaca, NY: Cornell University Press.

Burke, Brian. 2014. *Gamify: How Gamification Motivates People to Do Extraordinary Things*. New York, NY: Bibliomotion, Inc.

Carothers, Tom and Saskia Brechenmaker. 2014. “Closing Space: Democracy and Human Rights Under Fire.” Carnegie Endowment for International Peace. http://carnegieendowment.org/files/closing_space.pdf.

Carpenter, Charli. 2014. *“Lost” Causes: Agenda Vetting in Global Issue Networks and the Shaping of Human Security*. Ithaca, NY: Cornell University Press.

Carpenter, Charli. 2007. “Setting the Advocacy Agenda: Theorizing Issue Emergence and Nonemergence in Transnational Advocacy Networks.” *International Studies Quarterly* 51(1): 99–120.

Chadwick, Andrew. 2013. *The Hybrid Media System: Politics and Power*. New York, NY: Oxford University Press.

Clark, Ann Marie and Kathryn Sikkink. 2013. “Information Effects and Human Rights Data: Is the Good News about Increased Human Rights Information Bad News for Human Rights Measures?” *Human Rights Quarterly* 35: 539–568.

Clark, Ann Marie. 2001. *Diplomacy of Conscience: Amnesty International and Changing Human Rights Norms*. Princeton, NJ: Princeton University Press.

Cox, Joseph and Lorenzo Franceschi-Bicchierai. 2016. “Meet NSO Group, the New Big Player in the Government Spyware Business.” *Motherboard*, August 25. https://motherboard.vice.com/en_us/article/wnxpjm/nso-group-new-big-player-in-government-spyware.

D’Andrea, Alessia, Fernando Ferri, and Patrizia Grifoni. 2010. “An Overview of Methods for Virtual Social Network Analysis.” In *Computational Social Network Analysis: Trends, Tools, and Research Advances*. Heidelberg: Springer.

Dermot Groome. 2001. *The Handbook of Human Rights Investigation*. Northborough, MA: Human Rights Press.

DeLanda, Manual. 2016. *Assemblage Theory*. Edinburgh, Scotland: Edinburgh University Press.

Doyle, Kate. 2005. “The Guatemalan Police Archives.” *National Security Archive Electronic Briefing Book No. 170*. National Security Archives. George Washington University. http://nsarchive.gwu.edu/NSAEBB/NSAEBB170/index.htm.

Earl, Jennifer and Katrina Kimport. 2011. *Digitally Enabled Social Change: Activism in the Internet Age*. Cambridge, MA: MIT Press.

Etherington, Darrell. 2014. “Apple Patents Headphones with Integrated Activity, Health And Fitness Tracking.” Techcrunch, February 18. https://techcrunch.com/2014/02/18/apple-patents-headphones-with-integrated-activity-health-and-fitness-tracking/

Finnemore, Martha and Kathryn Sikkink. 1998. “International Norm Dynamics and Political Change.” *International Organization* 52(4): 887–917.

Finnemore, Martha. 1993. “International Organizations as Teachers of Norms.” *International Organization* 47(3): 565–597.

Fisher, Ian. 2017. “Israel Denies a Work Visa to Human Rights Watch Researcher.” *The New York Times*, February 24. https://www.nytimes.com/2017/02/24/world/middleeast/israel-human-rights-watch-visa.html?_r=0.

Fishwick, Carmen. 2014. “Tomnod – the Online Search Party Looking for Malaysian Airlines Fligth MH370.” *The Guardian*, March 14. https://www.theguardian.com/world/2014/mar/14/tomnod-online-search-malaysian-airlines-flight-mh370.

Franzoni, Chiara and Henry Sauermann. 2014. “Crowd Science: The Organization of Scientific Research in Open Collaborative Projects.” *Research Policy* 43(1): 1–20.

Friman, H. Richard, editor. 2015. *The Politics of Leverage in International Relations: Name, Shame, and Sanction*. New York, NY: Palgrave Macmillan.

Gibson, James J. 1986. *The Ecological Approach to Visual Perception*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Girit, Selin. 2017. “Turkey crackdown: Rights groups outraged by latest arrests.” *BBC*, July 7. http://www.bbc.com/news/world-europe-40532742

Graham, Thomas. 2016. “Political Violence Targeting Colombia’s Human Rights Workers on the Rise.” *Colombia Reports*, April 25. http://colombiareports.com/death-threats-murders-human-rights-activists-rise/.

Grugel, Jean and Enrique Peruzzotti. 2015. "Global Norms, Domestic Politics: Children’s Rights and Civil Society in Argentina." In *Global Matters for Non-Governmental Public Action*, edited by Jude Howell, 18–40. New York: Palgrave Macmillan.

Guzmán, Patricio. 2010. “Nostalgia for Light.” DVD. Directed by Patricio Guzmán. Brooklyn, NY: Icarus Films.

Hafner-Burton, Emilie M., Miles Kahler, and Alexander H. Montgomery. 2009. “Network Analysis for International Relations.” *International Organization* 63: 559–592.

Henry, Caleb. 2016. “Forecast International Expecting 1,935 New Remote Satellites by 2025.” *Satellite Today*, July 14. http://www.satellitetoday.com/publications/st/2016/07/14/forecast-international-expecting-1935-new-remote-sensing-satellites-2025/.

Higgott, Richard, Geoffrey Underhill, and Andreas Bieler. 2000. *Non-State Actors and Authority in the Global System*. New York, NY: Routledge.

Hill Jr., Daniel W., Will H. Moore, and Bumba Mukherjee. June 2013. “Information Politics Versus Organizational Incentives: When Are Amnesty International's ‘Naming and Shaming’ Reports Biased?” *International Studies Quarterly* 57(2): 219–232.

InSerbia. 2015. “Trifkovic: Many of Srebrenica Victims Live in the United States.” InSerbia Network Foundation. https://inserbia.info/today/2015/07/trifkovic-many-of-srebrenica-victims-live-in-the-united-states/.

Jennings, Christian and Amy Maxmen. 2013. “The Science of War: How DNA Puts a Face on the Missing.” Nautilus. http://nautil.us/issue/6/secret-codes/the-science-of-war.

Joyce, Christopher and Eric Stover. 1991. *Witnesses from the Grave: The Stories Bones Tell*. New York, NY: Little Brown & Co.

Kacowicz, Arie M. 2005. *The Impact of Norms in International Society: the Latin American Experience, 1881-2001*. Notre Dame, IN: University of Notre Dame Press.

Kassin, Saul, *et al*. 2001. “On the 'General Acceptance' of Eyewitness Testimony Research: A New Survey of the Experts.” *American Psychologist* 56(5): 405–416.

Keck, Margaret and Kathryn Sikkink. 1998. *Activists Beyond Borders*. Ithaca, NY: Cornell University Press.

Kendall, Marisa. 2016. “Palantir using big data to solve big humanitarian crises.” *The Mercury News*, October 4. http://www.mercurynews.com/2016/10/04/palantir-using-big-data-to-solve-big-humanitarian-crises/.

Khagram, Sanjeev, James Riker, and Kathryn Sikkink, editors. 2002. *Restructuring World Politics: Transnational Social Movements, Networks and Norms*. Minneapolis, MN: University of Minnesota Press.

Klotz, Audie. 1995. *Norms in International Relations: The Struggle against Apartheid*. Ithaca, NY: Cornell University Press.

Landman, Todd. 2005. *Protecting Human Rights: A Comparative Study*. Washington, DC: Georgetown University Press.

Levinger, Matthew. 2009. “Geographical Information Systems Technology as a Tool for Genocide Prevention: The Case of Darfur.” *Space and Polity* 13(1).

Levy, Ari. 2016. “The CIA-backed start-up that’s taking over Palo Alto. *CNBC*, January 12. https://www.cnbc.com/2016/01/12/the-cia-backed-start-up-thats-taking-over-palo-alto.html.

Livingston, Steven. 2015. “Commercial Remote Sensing Satellites and the Regulation of Violence in Areas of Limited Statehood.” Center for Global Communication Studies. University of Pennsylvania. http://www.global.asc.upenn.edu/app/uploads/2015/01/Livingston_Final.pdf.

Livingston, Steven. 2017. “Disinformation Campaigns Target Tech-enabled Citizen Journalists.” Brookings Institution. https://www.brookings.edu/blog/techtank/2017/03/02/disinformation-campaigns-target-tech-enabled-citizen-journalists/.

Livingston, Steven and Sushma Raman. 2016. *Human Rights & Technology in the 21st Century: Conference Report*. Carr Center for Human Rights Policy. Harvard Kennedy School. http://carrcenter.hks.harvard.edu/conference-report-human-rights-technology-21st-century.

Loveluck, Lousia. 2013. “Egypt Convicts US NGO Workers.” *The Guardian*, June 4. https://www.theguardian.com/world/2013/jun/04/egypt-convicts-us-ngo-workers-sam-lahood.

Lumsdaine, David H. 1993. *Moral Vision in International Politics: The Foreign Aid Regime, 1949– 1989*. Princeton, NJ: Princeton University Press.

Mayer-Schönberger, Viktor and Kenneth Cukier. 2013. *Big Data*. London, England: John Murray.

McGrenere, Joanna and Wayne Ho. 2000. “Affordances: Clarifying and Evolving a Concept.” In *Proceedings of Graphics Interface 2000*: 179–186.

Melton, Terry. 2014. “Digging Deep: Next Generation Sequencing for Mitochondrial DNA Forensics.” *Forensics Magazine*. http://www.forensicmag.com/article/2014/01/digging-deep-next-generation-sequencing-mitochondrial-dna-forensics.

Merry, Sally Engle. 2016. *The Seduction of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking*. Chicago, IL: University of Chicago Press.

Müller, Marin and Carolin Schurr. 2016. “Assemblage Thinking and Actor-Network Theory: Conjuctions, Disjunctions, Cross-Fertilisations.” *Transactions of the Institute of British Geographers* 41(3): 217–229.

Murdie, Amanda M. and David R. Davis. 2012. “Shaming and Blaming: Using Events Data to Assess the Impact of Human Rights INGOs.” *International Studies Quarterly* 56(1): 1–16.

Murdie, Amanda. 2009a. “The Impact of Human Rights NGO Activity on Human Right Practices.” *International NGO Journal* 4 (10):421–440.

Murdie, Amanda. 2014. *Help or Harm: The Human Security Effects of International NGOs*. Redwood City, CA: Stanford University Press.

Neumayer, Eric. 2005. “Do International Human Rights Treaties Improve Respect for Human Rights?” *Journal of Conflict Resolution* 49(6): 925.

Nielsen, Rasmus Kleis. 2012. *Ground Wars: Personalized Communication in Political Campaigns*. Princeton, NJ: Princeton University Press.

Nimmo, Ben. 2017. “Blowing the Whistle on Sputnik.” Digital Forensic Research Lab. The Atlantic Council. https://medium.com/dfrlab/blowing-the-whistle-on-sputnik-493e0bc26e99.

Norman, Donald A. 1988. *The Design of Everyday Things*. New York, NY: Doubleday.

Odula, Tom. April 6, 2016. “International Criminal Court Prosecutor: Crimes Against Humanity Case Against Kenya's Deputy President Collapsed After 17 Witnesses Refused to Testify Because of Intimidation.” *U.S. News & World Report*. http://www.usnews.com/news/world/articles/2016-04-06/lawyer-failed-kenya-case-indictment-against-prosecution.

Ong, Aihwa and Stephen J. Collier, editors. 2005. *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*. Oxford, UK: Wiley-Blackwell.

Parks, Lisa. 2009. “Digging Into Google Earth: An Analysis of ‘Crisis in Darfur.’” Geoforum 40(1): 535–545.

Pinault, Nicolas. 2017. “Bodies of Missing UN Investigators Found in DRC.” Voice of America, March 28. http://www.voanews.com/a/drc-missing-un-investigators/3784955.html.

Puddington, Arch. 2007. *Freedom of Association Under Threat: The New Authoritarians' Offensive Against Civil Society*. Freedom House. https://freedomhouse.org/report/freedom-association-under-threat-new-authoritarians-offensive-against-civil-society/freedom.

Reuters Staff. 2016. “Turkey halts activities of 370 groups as purge widens.” Reuters, November 12. http://www.reuters.com/article/us-turkey-security/turkey-halts-activities-of-370-groups-as-purge-widens-idUSKBN1370DP.

Risse, Thomas, Stephan C. Ropp, and Kathryn Sikkink, editors. 1999. *The Power of Human Rights*. New York, NY: Cambridge University Press.

Risse, Thomas, Stephan C. Ropp, and Kathryn Sikkink. 2013. *The Persistent Power of Human Rights*. New York, NY: Cambridge University Press.

Rogers, Elliott. 1985. “On the Reliability of Eyewitness Testimony: A Retrospective Review.” *Psychological Reports* 57(1):219–226.

Ron, James, Howard Ramos, and Kathleen Rogers. 2005. “Transnational Information Politics: NGO Human Rights Reporting, 1986–2000.” *International Studies Quarterly* 49: 557–587.

Rosen, Jonathan W. 2015. “Reporters, Witnesses Silenced ‘One by One’ with ICC Link Deadly in Kenya.” *Al Jazeera America*, August 24. http://america.aljazeera.com/articles/2015/8/24/kenyas-dark-path-to-justice.html.

Rosenblatt, Adam. 2015. *Digging for the Disappeared: Forensic Science After Atrocity*. Standford, CA: Stanford University Press.

Roth, Kenneth. 2016. “The Great Civil Society Choke-out.” *Foreign Policy*, January 27. http://foreignpolicy.com/2016/01/27/the-great-civil-society-choke-out-human-rights-democracy-india-russia-china-kenya/.

Scheithauer, R. 2014. “Expert Opinion on DNA Analyses. Gerichtsärzte am Institut für Gerichtliche Medizin.

Schingler, Robbie. 2017. “Planet Launches Satellite Constellation to Image the Whole Planet Daily.” Planet. https://www.planet.com/pulse/planet-launches-satellite-constellation-to-image-the-whole-planet-daily/.

Srihari, Sargur N., Ajay Shekhawat, and Stephen W. Lam. 2000. “Optical Character Recognition.” In *Encyclopedia of Computer Science, 4th edition*, edited by Anthony Ralston and Edwin D. Reilly, 1326–1333. Chichester, UK: John Wiley and Sons.

The Fragile States Index Report 2017, 2017. The Fund for Peace. Accessed May 10, 2017. http://fundforpeace.org/fsi/2017/05/14/fragile-states-index-2017-annual-report/951171705-fragile-states-index-annual-report-2017/

Thomas, Daniel C. 2001. *The Helsinki Effect: International Norms, Human Rights, and the Demise of Communism*. Princeton, NJ: Princeton University Press.

Thomas, Daniel. 2002. “Boomerangs and Superpower: International Norms, Transnational Networks and U.S Foreign Policy.” *Cambridge Review of International Affairs* 15: 25–43.

To, Hien and Cyrus Shahabi. 2017. “Location Privacy in Spatial Crowdsourcing.” University of Southern California. https://arxiv.org/pdf/1704.06860.pdf.

“Training Manual on Human Rights Monitoring - Chapter 8: Interviewing.” Human Rights Library. University of Minnesota. http://hrlibrary.umn.edu/monitoring/chapter8.html.

Tufft, Ben. 2015. “Putin Signs New Law to Ban 'Undesirable' Organizations from Russia.” *The Independent*, May 25. http://www.independent.co.uk/news/world/europe/putin-signs-new-law-to-ban-undesirable-organisations-from-russia-10273199.html.

Waeraas, Arild and Moshe Maor, editors. 2015. *Organizational Reputation in the Public Sector*. New York, NY: Routledge.

Wagner, Sarah. 2008. *To Know Where He Lies: DNA Technology and the Search for Srebrenica’s Missing*. Berkeley, CA: University of California Press.

Wang, Maya. 2015. “Dispatches: China Tightens Screws on Civil Society.” Human Rights Watch. https://www.hrw.org/news/2015/05/08/dispatches-china-tightens-screws-civil-society.

Weld, Kirsten. 2014. *Paper Cadavers: The Archives of the Dictatorship in Guatemala*. Durham, NC: Duke University Press.

Wenger, Etienne, Richard A. McDermott, and William Snyder. 2002. *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Cambridge, MA: Harvard Business Review Press.

Carr Center for Human Rights
Policy Harvard Kennedy School
79 John F. Kennedy Street
Cambridge, MA 02138

www.carrcenter.hks.harvard.edu