

SENSING AND SHAPING EMERGING CONFLICTS

Report of a Workshop by the
National Academy of Engineering and United States Institute of Peace
Roundtable on Technology, Science, and Peacebuilding

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Introduction and Themes

Technology has revolutionized many aspects of modern life, from how businesses operate, to how people get information, to how countries wage war. Certain technologies in particular, including not only cell phones and the Internet but also satellites, drones, and sensors of various kinds, are transforming the work of mitigating conflict and building peaceful societies.

Rapid increases in the capabilities and availability of digital technologies have put powerful communications devices in the hands of most of the world's population. These technologies enable one-to-one and one-to-many flows of information, connecting people in conflict settings to individuals and groups outside those settings and, conversely, linking humanitarian organizations to people threatened by violence. Communications within groups have also intensified and diversified as the group members use new technologies to exchange text, images, video, and audio. Monitoring and analysis of the flow and content of this information can yield insights into how violence can be prevented or mitigated. In this way technologies and the resulting information can be used to detect and analyze, or *sense*, impending conflict or developments in ongoing conflict.

On October 11, 2012, the National Academy of Engineering (NAE) and the United States Institute of Peace (USIP) held a workshop in Washington, DC, to identify “major opportunities and impediments to providing better real-time information to actors directly involved in situations that could lead

to deadly violence.” The workshop brought together experts in technology, experts in peacebuilding, and people who have worked at the intersections of those two fields on the applications of technology in conflict settings, to consider uses of technology to sense emerging and ongoing conflicts and provide information and analyses that can be used to prevent violent and deadly conflict. As Fred Tipson, special advisor to the Roundtable on Technology, Science, and Peacebuilding (see Box 1-1), asked in his opening

Box 1-1
Roundtable on Science, Technology, and Peacebuilding

The Workshop on Sensing and Shaping Emerging Conflicts was the third of four workshops convened by the Roundtable on Science, Technology, and Peacebuilding. A joint initiative of the National Academy of Engineering and the US Institute of Peace, the roundtable consists of senior executives and experts from government agencies, universities, corporations, and nongovernmental organizations (NGOs). It was established in 2011 to make a measurable and positive impact on conflict management, peacebuilding, and security capabilities by bringing together leaders from the technical and peacebuilding communities. Its principal goals are:

1. To accelerate the application of science and technology to the process of peacebuilding and stabilization;
2. To promote systematic, high-level communication between peacebuilding and technical organizations on the problems faced and the technical capabilities required for successful peacebuilding; and
3. To collaborate in applying new science and technology to the most pressing challenges faced by local and international peacebuilders working in conflict zones.

The first workshop concerned ways to augment agricultural extension systems to serve the purposes of peacebuilding. The second was on enhancing the ability of actors in the peacebuilding community to share information in the interest of solving common problems.^a The fourth workshop will be on harnessing systems methods to think more systematically and holistically about peacebuilding problems.

^a Summaries of the workshops are available on the NAE website, <http://www.nae.edu/publications.aspx>, and at the USIP website, <http://www.usip.org/publications-tools> (May 14, 2013).

remarks, “Where are the opportunities, the sweet spots, in developing not only the concepts and applications of the technology but the strategies by which the information arrived at can be applied for the purposes of intervening to shape the conflict itself?”

THE ROLE OF INFORMATION IN SENSING AND SHAPING CONFLICT

The application of technology to many problems, including sensing and shaping conflict, has generally followed a simple three-step template, said workshop cochair Prabhakar Raghavan, vice president of engineering at Google. The first step is the gathering of information. The second is large-scale analysis of the data, a science that is still being developed. The third step is conversion of the insights that result from analysis into actionable information and transmission of that information to operators and actors in the field. This broad paradigm may sound too generic, said Raghavan, but it has actually served the field well in maintaining certain critical distinctions.

Consideration of the roles that technologies can play in sensing and shaping emerging conflict is complicated by the great breadth of activities encompassed by both “technology” and “peacebuilding,” said Lawrence Woocher, a research director at Science Applications International Corporation (SAIC) and the other workshop cochair. Peacebuilding involves political, diplomatic, social, economic, legal, and security activities. It can be undertaken by individual actors, local groups, national groups, international organizations, and the private sector. It is not just the absence of violence but includes aspects of positive attributes such as freedom and justice. (Box 1-2 provides a perspective on the many capabilities encompassed by the term “technology.”)

Notwithstanding this diversity, Woocher identified several common elements of information used to support peacebuilding. First, it includes (or enables) a broad assessment of the relative risks of the outbreak or escalation of violent conflict. Such information can be critical for actors engaged in peacebuilding, whether they are working globally to identify regions or countries that are at greatest risk or locally to identify which neighborhood, county, or province in a country is susceptible to conflict.

Second, information for peacebuilding contains or implies some form of conflict analysis. In its most useful form, such an analysis yields insight about the roots of a conflict. Who are the actors and groups involved? What

Box 1-2
From the World Wide Web to Google Earth

Dennis King, a senior humanitarian affairs analyst with the Humanitarian Information Unit of the US Department of State, provided a personal perspective on the important changes in technology that have occurred over the past two decades. In the mid-1990s, when he was working for the US Agency for International Development, USIP mounted an initiative known as *Virtual Diplomacy* driven, in part, by the question of why the 1994 genocide in Rwanda was not anticipated. At that time, two new technologies had just become available: the World Wide Web and civilian access to high-resolution satellite imagery. The Virtual Diplomacy initiative was designed to explore the degree to which these and other technologies could influence peacebuilding, conflict prevention, and early warning about conflicts.

Since then, Web 1.0, which was based on mostly static websites, has evolved to the more interactive Web 2.0 and then to the 3.0 Web of social media, blogs, wikis, and other innovations. At the same time, low-cost, portable handheld devices have moved computers from offices to the field, inaugurating an era of truly personal and omnipresent computing and communications. Another major change, said King, was the release in 2005 of Google Earth, which helped break the government monopoly on high-resolution satellite imagery.

Other changes have been institutional and cultural. In the 1990s, most of the people in government agencies who took an interest in technologies were what King termed “geek bureaucrats” who were somewhat marginalized in their organizations. Since then, a thriving virtual community has emerged of people who are focused on these issues and on putting technologies to work.

One thing, however, remains the same as in the 1990s, King said. The central problem is not one of technology but of political will (an issue discussed in chapter 5). “Political will is not an icon on your computer screen,” King said. “Generating political will is the missing factor in peacebuilding and conflict resolution.” Even in the Rwanda case, Rwandan nationals had communicated to outsiders that genocide was being planned. The international community simply lacked the political will to act.

are their interests, capabilities, and motives? What are the broad trends and contextual factors that affect the conflict?

The third common element involves communication of the information to the relevant actors—national governments, international organizations,

community groups, and other stakeholders. However, local groups may not have the kinds of electronic networks available elsewhere, they may have low levels of technological literacy, they may distrust the sources, and—most importantly—they may have motives and agendas that are not peaceful or constructive. We cannot assume that only providing more timely, accurate, and locally actionable information will lead to better behaviors and outcomes. Technology has a vital role to play in addressing barriers to access and getting information to critical actors in a timely way, Woocher emphasized, but it can also be used for nefarious purposes.

ARCHETYPAL CHALLENGES

Woocher identified four archetypal peacebuilding challenges as a way of stimulating the thinking of the workshop participants.

The first is what he called *the early warning problem*. How can information be collected and analyzed in such a way as to identify risks in a timely fashion, assess the nature of those risks, and communicate the results of the analysis to people who are in a position to prevent a conflict from breaking out or escalating? Many efforts have focused on ranking countries in terms of their susceptibility to conflict. But the greater challenge is getting information to the local level to help NGOs or local peacebuilding actors dedicate their resources most effectively. Furthermore, early warnings can be false warnings. Forecasts of relatively rare events sometimes result in warnings of conflicts that actually are not likely, even though the warnings can have serious consequences such as causing people to flee their homes or even to act preemptively in self-defense. Can technology mitigate the negative consequences of what might otherwise be an effective early warning system? A useful case study, said Woocher, is Liberia, where many people were concerned about risks surrounding recent elections, and investments were made in local early warning networks to counter these risks.

The second archetypal problem is *how to gain local support* for mediation of disputes that could escalate into violent conflict. Many past initiatives have sought to bring people together to engage in dialogue and resolve disputes nonviolently. Can technology increase the effectiveness of such initiatives? A useful case study in this regard is Kenya, where text messaging is being used to identify emerging disputes and enable preventive interventions.

The third type of problem is *promoting reconciliation* and understanding across identity groups. Can technology help groups come together after a war to start the process of long-term cooperation? In Sri Lanka, where groups are

extremely divided and traumatized after the country's civil war, some NGOs are using technologies to support reconciliation efforts.

The fourth problem is that of *promoting peaceful change* under extreme authoritarian settings or amid intense violence. The political space in such situations may be very narrow, requiring that activists using strategies of nonviolence to mobilize and work together. Can technologies be used to maintain and support cooperative and interactive relationships among identity groups in such circumstances? Syria is an obvious example of this problem, said Woocher, but many other cases exist.

THEMES OF THE WORKSHOP

Multiple broad themes emerged from the presentations and discussions, and they are summarized here.¹

1. *Sensing as a Prelude to Shaping.* The act of sensing requires an answer to the question, “sensing to what end?” Only in relation to how the sensed information will be used to influence outcomes is it possible to know what kinds of information should be gathered, over what time frame, with whose involvement, and in what formats. Similarly, for data acquisition to have value, concrete analysis, dissemination, and action plans are equally important. Peacebuilding problems rather than technologies themselves must be the drivers of technological choices.

Tipson remarked that “Early warnings...can help people get out of the way, whether or not they change the course of events. But the focus still needs to be on how to assist the people engaged in theater to avoid the worst consequences of potential deadly violence.” To provide actionable information, a sensing system must reduce rather than exacerbate uncertainty. Neil Levine, director of the Office of Conflict Management and Mitigation at USAID, observed, “Early warnings often present decision makers with the difficulty of uncertain information and high costs. Sensing can help in this respect by bringing clarity to how certain or uncertain information is.”

¹ The workshop featured examples of several ITC technologies and their application to a class of peacebuilding problems related to sensing and shaping conflict. This summary, therefore, provides neither a comprehensive overview of the current state of the art, the gaps, and recommendations for technological research to fill those gaps, nor recommendations related to the application of particular technologies to specific problems in peacebuilding.

2. *Reconciling Values with Strategies.* All actors in postconflict societies are motivated by goals in addition to “peace” and “nonviolence.” Simply eliminating violence, for example, is unlikely to create a self-sustaining peace: peace without justice, peace without progress, peace without some sort of social change is likely to be short lived. In developing strategies for peacebuilding intervention, however, NGOs, IOs, and governments need to recognize that not all actors will have the same values, priorities, and strategic assumptions regarding peace.

Melanie Greenberg, president and CEO at the Alliance for Peacebuilding, observed that most peacebuilders have a broader vision of the kinds of societies their work advances. Nonviolence is one goal, but their work typically embodies other objectives. As a result, explained Rafal Rohozinski, a principal at the SecDev Group, direct collaboration is often not realistic without negotiation, compromise, and accommodation. Without a conscious attempt to link sensing activities to a concrete strategy for change, there is no guarantee that better information will lead to either change or peace.

3. *Prioritizing a Few Key Problems and Sectors.* Conflict is a highly complex phenomenon, but peacebuilding can be made more manageable by focusing on recurrent challenges in specific settings. Organizing around a few priority problems and considering the use of technological advances to address specific problems may enable outcomes that can be generalized and applied more broadly. For example, Woocher distinguished four phases as potential settings for peacebuilding: preconflict, midconflict, postconflict, and political mobilization. And Chris Spence, chief technology officer at the National Democratic Institute, in his overview of election monitoring, highlighted the value of concentrating on particular problem areas, such as export of election data, consolidation in the cloud and remote access, collection and representation of basic political data, and communication of results.
4. *Understanding the Larger System.* The counterpoint to the preceding theme is that segmentation of problems must not ignore the social, cultural, and economic context within which they are embedded. In any project, the implications of potential changes in the wider social and political setting should be gauged so that the outcomes of change can be incorporated in a larger change management strategy.

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