Chapter 24
Sociotechnical Uses of Social Web Tools during Disasters

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ABSTRACT

Social web tools are being leveraged by participants to communicate throughout their workday as well as during times of crisis. Using the London Bombings of 7 July 2005 as a case study, this chapter illustrates the need for sociotechnical interventions in systems design. By employing Actor Network Theory the author makes visible the active participants and technologies within the ecosystems of social media tools. Such visibility provides insight to the designer seeking to optimize communication systems in the wake of disaster, as well as providing further generalization to everyday use. Guidelines for improving systems and user interfaces based on disaster scenarios are described.

INTRODUCTION

Mobile technologies and social networking systems have not only developed alongside each other, but have also influenced each other's evolution due to the demands of people who use both platforms. Participants merge the functionality of their cell phones, smart phones, digital cameras, tablet devices, and laptop computers with a rapidly increasing array of software on the social web—Facebook, Twitter, Wikipedia, Flickr, and blogs, to name only a few. In doing so, they create a massive number of endlessly shifting connections among information, people, and cultures. The spaces that people and technology create are immensely dynamic, forcing researchers to pay attention to what goes on within the social web.

One of the reasons software designers and academic scholars should find this merger of people and technologies so important is their use during natural disasters, terrorist events, or other catastrophic events. During these crises, millions of people turn to the social web for information, and through mobile technologies they can do so instantly. Groups of people (often strangers) quickly assemble online to gather information,

determine its validity as much as possible, and distribute it as effectively as they can. Looking at the ways people use Information and Communication Technologies (ICTs) in these situations indicates that we, as researchers and designers, can learn more about the activities that occur in these systems if we become active participants in the situations and spaces where these tools are used. Once we position ourselves and our research firmly within the spaces we seek to understand and design for, we can then develop better methods for tracing such networks and identifying the people and technologies that form those networks. Working in these participatory cultures during times of disaster becomes even more crucial to our research because so many social media and news sites that become spaces of information and communication are not captured by current web archiving efforts. The history of how ICTs and people respond to crises is lost in a matter of days, or even hours, as pages update with new information and old information is purged or lost. Thus, we cannot rely on looking solely backward in our research toward well-documented moments. We must become involved in those moments as they happen in order to capture the full picture of what happens and why, and how our expertise can help.

I have elsewhere documented a sociotechnical approach to the research and design of ICTs using ANT, or Actor Network Theory (Potts, 2008a, 2008b, 2009a, 2009b, 2009c). ANT originates with Bruno Latour (1987, 1996, 2005), who argued that any participant—human *and* non-human—in a network is an *actor* who has equal agency to affect that network. Actors are then brought together into *assemblages*, or a series of connections used to complete specific tasks or work in response to some broader event. As a result, these assemblages are quite often tactical. The relations among actors can be quick and utilitarian, formed only as long as is needed to complete the task at hand. Other assemblages may take on much larger tasks that require longer and more durable connections among actors.

This adaptability makes ANT an extremely useful method for tracing what happens in the social web, whether we are studying a specific moment of crisis or a broader range of activities in other situations. ANT provides a method for making those connections and their function visible to study. Researchers can parse the relationships among people and technologies that allow participants to find, validate, and distribute information. ANT is not "the answer," or a universal cure for better web design. However, it does offer a methodology to researchers so that we can learn from these networks while we work within them. We can trace "the social and technical elements" networks that are always "ephemeral, shifting, and expanding" (Potts 2009a, p. 34).

BACKGROUND

As stated earlier, Actor Network Theory posits that all actors in a network are equal agents. Agency is distributed across the network so that we can re-conceptualize the binary frameworks with which we often think of ourselves and the things, places, and events around us. As Callon (1986) suggests, understanding the function of agency in ANT asks us to adopt three principles: symmetry among actors, an agnosticism toward their roles, and the assumption that actors can freely associate with one another. Making people active agents frees them from the totalitarianism of technological determinism. But there are *prescriptions* (Akrich & Latour, 1992) within the network that enable and constrain what actors can and cannot do. Recognizing non-human actors as agents means we see that they impact what people do and how. ANT refuses an "essentialist position" in which we "attribute specific properties" to certain actors and only those actors (Tatnall & Gilding, 1999, p. 957). In other words, networks are co-constituted systems in which actors facilitate each other's activities. More to the point, they do so by opening possibilities for altering the means and purposes

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