

## Chapter 4.14

# Designing for Disaster: Social Software Use in Times of Crisis

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### **ABSTRACT**

Using the London Bombings of 7 July 2005 as a case study, this paper 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 software. Such visibility provides insight to the designer seeking to optimize communication systems in the wake of disaster. Guidelines for improving systems and user interfaces based on disaster scenarios are described.

### **BRIDGING THE SOCIAL AND TECHNICAL WITH ACTOR NETWORK THEORY**

The rapid development of people-powered communication tools—cell phones, digital cameras, blackberries, laptops and their accompanying software, wikis, Facebook, My Space, and blogs have created a dynamic, constantly evolving space where ordinary people can communicate almost instantly. Moreover, the ability to easily place links and send data means that these dynamic sites weave themselves into an endlessly shifting web of interconnected references and allusions.

These Information and Communication Technology (ICT) systems have evolved amidst a tumultuous period of crises and disasters affecting millions. The urgency of upheavals—be they natural disasters or terrorist events—has spurred on the rapid creation and transformation

of communication tools. Online social software, in particular, has a participatory culture that has responded to events in ways that add to and even circumvent traditional media channels. Our methods as designers of ICTs have not kept pace with the rapidly evolving technologies and the communities they support. In this paper, I propose a sociotechnical approach that can optimize these systems based partially on a previously published conference proceeding (Potts, 2008b) and my unpublished dissertation (Potts, 2007).

The acid test of sociotechnological design might just be the minutes, hours, and days after a natural or manmade disaster. Researching how people find and exchange information, share links, and offer support during these events can yield a more complete, detailed, and accurate understanding of how individuals communicate in response to terrorism, hurricanes, tsunamis and other crisis situations. Extending the sociotechnical discipline further by encouraging designers to become active participants within the activities they are trying to design for will lead to more robust systems that can mediate communication between participants. However, you cannot optimize that which you cannot recognize, and that is why finding a means to map situations and players is the essential starting point for improving design.

Actor Network Theory (ANT) offers an excellent method by which designers can begin to make visible and respond to social software ecosystems. ANT's creator, Bruno Latour, noted that his method should be used when "boundaries are . . . terribly fuzzy," since other social theories do not work so well when "things are changing fast," and this certainly describes the post-bombing activity on the internet (Latour, 2005). The major tenet of ANT is that all participants, whether they are human or non-human, have equal agency to affect any given situation. These participants are referred to as "actors," and they can be people or technologies. Actors come together to form a network, creating assemblages of relations, which

are often temporary and specific to an individual action or a broader event.

Understanding this concept allows designers to see a landscape of participants—human or technological—who cooperate to create, validate, and share information. Illustrating these scenarios as well as finding the pathways taken by the participants of these social software systems will help designers rethink their current strategies for design and contextual use. Researchers have used ANT to reconsider the design of Common Information Spaces (CIS) with regard to Computer Supported Collaborative Work (CSCW) (Rolland, Hepsø, & Monteiro, 2006) to bring to light social issues within technology design (Berg, 1998), to understand emergence and diffusion of technology (Bruun & Hukkinen, 2003), to explore sociopolitical frameworks for user-centered design (Spinuzzi), and to support application development (Mackay, Carne, Beynon-Davies, & Tudhope, 2000; Tatnall & Gilding, 1999).

While I am not suggesting ANT as an "answer" or an end point for better social software design, I am claiming that it will provide designers with a methodology for leveraging their own participation, to gain insight into technology and its cultural use. In other words, it enables designers to see the social and the technical elements of systems including ephemeral, shifting, and expanding systems for which they are designing.

## **EMERGENT SOCIAL SOFTWARE ECOLOGIES**

Over the last few years, social software such as blogs, wikis, and media-sharing sites have provided an outlet for people to share and distribute information. Some of these tools are already deployed, others are modified as disasters unfold, and a few are created as a result of the disaster.

The diagram in Figure 1 captures the socio-technical context of an event. While this diagram

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