The Role of Social Media in Designing and Managing
Multi-Organizational Information Exchange for Emergency Management

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My interests are focused on the organizational level and the inter-organizational systems generated across emergency management activities. My research program examines how organizations build the capacity to detect, recognize, and interpret risk while developing strategies for action that help to reduce that risk, particularly through the implementation of information and communication technology such as social media. Essentially, this research follows the tradition of organizational theorists and management scholars in public administration and sociology who have explored how we can effectively build institutions and interorganizational arrangements to manage risk across different social sectors and levels of political jurisdictions (Dynes 1978; Comfort 1999, 2005; Kapucu 2006; Robinson 2011). Once risk is detected, communication of that risk is vital in encouraging others to address their specific situations. My goal is to add value to this tradition by examining how institutions employ and are changed by social media in an effort to reduce systemic risk.

Social media platforms such as Facebook and Twitter represent a piece of a larger communication network strategy that helps to connect response agencies with affected communities. Social media serves a dual function. First, agencies receive information from people and other organizations; this facilitates larger information networks and allows agencies to accrue situational awareness. Second, agencies disseminate information to other actors in an effort to coordinate response and/or promote specific protective actions. The adoption and use of social media by emergency management related agencies correspond with the larger movement of public institutions that seek to increase public participation, transparency, and their collaboration with other agencies (Mergel 2013).

Receiving Information

Emergency managers and other public officials can use social media as information conduits to and from their constituents who may send requests directly to public agencies and officials during disasters. As mayor of Newark, current U.S. Senator Corey Booker, for example, received national attention for monitoring his Twitter account during extreme winter weather, which led him to show up on constituents' doorsteps with snow shovel in hand.

Social media also provides opportunities for personnel to accrue situational awareness by aggregating and analyzing the messages of other organizations and people. The digital operations center created by the American Red Cross and Dell provide one example in which incidents can be detected and monitored in real time. A set of challenges exists, however, in making sense out

of this "big data," including the creation of automated systems that identify, synthesize, and analyze key pieces of information (Schwartz, Naaman, and Matni 2013). Determining message veracity and relevance represent another set of challenges (Gupta and Kumaraguru 2012).

Once technical solutions are identified, however, public managers share the problem of integrating that intelligence into their larger decision-making apparatus, which, during response activities, can include an emergency operations center or other knowledge hubs such as web-based decision support platforms. All of these challenges are ripe for research.

Disseminating Information

Agencies charged with risk reduction in general can use social media to disseminate protective action messages, coordinate with other agencies, and crowdsource tasks out to the larger public across each phase of emergency management. During Boston bombing manhunt, the FBI engaged in crowdsourcing by posting photographs of suspects on social media and asking for potential leads. Several research teams are currently investigating these types of activities with the goal of creating more effective communication strategies via a more robust flow of information.

As part of a severe weather project team at the University of Oklahoma, Hank Jenkins-Smith conducts large-N research, for example, on how individuals use social media during disasters, and their level of attention to certain government-originated protective action messages (Ripberger et al. 2014). The HEROIC project housed at the University of California Irvine, led by Jeannette Sutton and Carter Butts, represents another example. They investigate how government organizations employ social media during extreme events and the information networks that are created as a result. They also outline a range of message types useful during response (Sutton et al. 2013). My current research project with Alan Steinberg establishes a message typology employed across all phases of emergency management and investigates how messages and targeted audiences change depending on the context (Wukich and Steinberg 2014a). Demonstrating how social media connects various actors is another aspect I am currently investigating (Wukich and Steinberg 2014b).

Even though technical systems such as social media represent a piece of a larger communication network strategy, web-based solutions may be untenable (Sutton 2012) in events with prolonged electrical outages, so traditional forms of face-to-face communication remain pivotal. Balancing these strategies with traditional communication practices represents a logical next step for researchers who are interested in this larger problem of facilitating information flow between disparate actors.

Conclusion

Whether a small organization or a large governance network is involved, disaster outcomes are affected by an actor's ability to recognize risk and make protective action decisions that reduce risk. Advances in information technology provide useful platforms through which people and organizations manage risk; however, working through problems associated with "big data" and

the design of effective information flow to facilitate situational awareness represent valuable future research opportunities.

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