A Relational Approach to Reducing Uncertainty During a Crisis through the use of Mobile Technology

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Abstract

It is estimated that six in ten American adults access the Internet using some form of a wireless device (Smith, 2010). In the years ahead, the United States is expected to reach 100 percent mobile phone penetration by 2013 ("Getting to Know the Mobile Population," 2009). Recognizing that the ability to access the information network at any time and at any place will continue to expand in the near term, it is incumbent upon public relations practitioners to critically examine the opportunity to reduce uncertainty through a variety of digital applications. In this regard, this paper adopts a relational approach toward the examination of how mobile technologies cultivate personal relationships and reciprocal communication methods that are characteristic to those outlined within uncertainty reduction theory. Findings include facilitating intelligent crisis response, implementing two-way communication, and encouraging citizen participation.

Keywords: Uncertainty reduction theory, Mobile technology, Crisis communication, Public relations

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The immediacy of crisis situations and public emergencies demand that communication and in particular public relations and crisis communication practitioners embrace uncertainty and make decisions based upon imperfect knowledge and nearly impossible time constraints. While practitioners are learning to operate under a growing list of unknowns, they must also address, manage and potentially reduce the same feeling of uncertainty within each of their stakeholders during a crisis event. Mobile communication technologies enable public relations practitioners to adopt an interactive, relational approach towards reducing uncertainty about which actions to take and which sources are credible during a crisis.

From a global perspective, the number of mobile broadband subscribers is expected to surpass 5 billion by the end of 2010 (The International Telecommunication Union, 2010). In the United States, it is estimated that 59% of American adults wirelessly access the Internet through a laptop, cell phone or other form of mobile device (Smith, 2010). American teens, on the other hand, have almost entirely adopted mobile technology as their preferred method of communication. A 2010 Pew Internet study showed that 75% of 12-17 year-olds now own cell phones. What's more, two-thirds of American teens say they are more likely to use their cell phones to text their friends rather than calling (Lenhart, Ling, Campbell & Purcell, 2010). As technology-savvy teenagers mature into young adults, it is expected that in the next three to five years the majority of Americans will purchase wireless carrier services more for the ability to be online and less for the ability to place a call (Baekdal, 2008). These statistics describe an environment where the combined ease of online connectivity and the high rate of diffusion enable communicators to quickly disseminate information to at-risk publics in an emergency.

With the assumption that our ability to access the information network at any time and at any place will continue to expand in the near term, it is incumbent upon public relations practitioners to critically examine the opportunity to reduce uncertainty through a variety of digital applications. In this regard, this paper adopts a relational approach toward the examination of how mobile technologies cultivate personal relationships and reciprocal communication methods that are characteristic to those outlined within uncertainty reduction theory. The purpose of this paper is to examine the progression of uncertainty reduction theory, discuss its implications from a relationship management perspective, apply the theory to crisis response strategies, and ask the question of whether or not mobile technology use might reduce uncertainty during the midst of a crisis. Findings include facilitating intelligent crisis response, implementing two-way communication, and encouraging citizen participation. The reason this topic deserves further research is twofold: the application of mobile technology is a relatively new field of study within communication, and reducing the level of uncertainty perceived by stakeholders during a crisis will ultimately enable those at-risk publics to more efficiently take action and perhaps prevent destruction of property or loss of life.

Defining the Parameters of a Relational Perspective

Before reviewing the literature on uncertainty reduction theory, it is necessary to first define the lens through which the theory will be examined. Public relations practitioners are often expected to provide evidence that communication activities have advanced business goals such as generating a profit, approving legislation or giving back to the community (Anderson, Hadley, Rockland & Weiner, 2009). It can be argued; however, that no matter the end goal, the way to successfully achieve a public relations objective is through the long-term management of key stakeholder relationships. Ledingham (2003) offered a theory of relationship management,

postulating that "effectively managing organizational-public relationships around common interests and shared goals, over time, results in mutual understanding and benefit for interacting organizations and publics" (p.190). To define relationships more concisely, one might also suggest that relationships exist between two entities because the actions of one group have consequences on the other (Hon & Grunig, 1999).

Grunig, Grunig and Ehling (1992) determined that the quality of a relationship could be measured through seven important concepts: reciprocity, trust, credibility, mutual legitimacy, openness, mutual satisfaction and mutual understanding. Ledingham and Bruning later explored some of these concepts (1998) to determine if they could be used to predict public perceptions, attitudes and behavior. The authors concluded "organizational involvement in and support of the community in which it operates can engender loyalty toward an organization among key publics when that involvement/support is known by those key publics" (p. 63). This statement adds weight to the notion that it is not enough to simply be involved with a community, but rather an organization must also be in dialogue with the community.

One year later, Hon and Grunig (1999) suggested a variety of strategies for achieving healthy organization-public relationships including control mutuality, trust, satisfaction and commitment. The two also recognized public relationships as being situational because the quality of a relationship can change just as quickly as the situation (Hon & Grunig, 1999). When the situation changes at the beginning of a quickly unfolding crisis, both the organization and its publics must rely heavily on trust and credibility (Nathan, Heath & Douglas, 1992). In fact, Oyer (2010) stated that while "trust is clearly important in any relationship… it can sometimes be the only thing holding an organizational-public relationship together when the chips fall" (para. 20).

One of Grunig, Grunig and Ehling's (1992) other seven dimensions for measuring relationships—reciprocity—was defined by Molm, Schaefer and Collett (2007) as "the giving of benefits to another in return for benefits received" (p.199). Reciprocity is recognized as having an instrumental value (i.e. the goods, services and social outcomes received from the reciprocator) and a symbolic value, or the value conveyed simply by the act of reciprocity itself. The latter of these two values is also where uncertainty reduction theory comes into play. Molm et al. (2007) argued, "acts of reciprocity carry uncertainty reduction value to the extent that they reduce the risk and uncertainty inherent in exchange, by providing evidence of the partner's reliability and trustworthiness" (p. 201). The trust and solidarity that results from symbolic communication has the potential to influence future behavioral choices, which is especially imperative in situations that involve risk or uncertainty.

Uncertainty Reduction

In addition to arguing that uncertainty reduction theory is intrinsic to the dimensions of trust and reciprocity found within the relationship management perspective, the logic for assuming a relational approach is further supported by the notion that both relationship management and uncertainty reduction rely heavily on interpersonal communication principles. To support this claim, an examination into the original Berger and Calabrese (1975) theory is required, as well as some of the ways in which the theory has been expanded or modified.

Uncertainty reduction theory, which has been widely studied throughout the field of interpersonal communication (e.g., Berger, 1986; Brashers, 2001; Clatterbuck, 1979; Goldsmith, 2001; Gudykunst & Nishida, 1984; Parks & Adelman, 1983), was first postulated by Berger and Calabrese in 1975 and built around the conjecture that "when strangers meet, their primary concern is one of uncertainty reduction or increasing predictability about the behavior of both

themselves and others in the interaction" (p. 100). They identified three stages in which communication occurs during these initial interactions: the entry phase, where "communication behaviors are, in part, determined by a set of communication rules and norms" (p. 99); the personal phase, where "interactants engage in communication about central attitudinal issues, personal problems and basic values" (p. 100); and the exit phase, where "decisions are made concerning the desirability of future interactions" (p. 100). In addition to the developmental stages of initial communication, Berger and Calabrese also identified seven axioms and 21 theorems for describing the human instinct to reduce uncertainty.

Continuing to focus on the initial phase of an interaction, Clatterbuck (1979) attempted to make Berger and Calabrese's (1975) theory more measurable by honing in on attribution confidence. He identified proactive and retroactive modes as instruments for measuring the attribution confidence of a relationship. Retroactive attribution processes were defined as "those which interpret the meaning of past actions in the relationship and which provide the information base upon which future interaction will be based," and proactive attribution processes were defined as "those which formulate or define behavioral options in the face of the wide variety of possible responses available to interacting individuals" (p.147).

Parks and Adelman (1983) closely examined romantic relationships to see if uncertainty reduction theory could be expanded to include the overall stability of relationships. Ultimately, Parks and Adelman were able to demonstrate that if an individual developed a strong interpersonal network with their significant other's friends, family and acquaintances, then the couple was less likely to break up. The study had successfully expanded uncertainty reduction theory beyond the initial phase of interaction while also confirming that network variables have as much association with uncertainty as dyadic variables between the couple.

After successfully applying uncertainty reduction theory to phases other than the initial interaction between strangers, another team of researchers sought to determine whether the original theory adequately accounted for the variable of similarity. Gudykunst and Nishida (1984) argued that Berger and Calabrese's (1975) limited view of cognitive and attitudinal similarity stopped short of determining whether other types of similarity such as cultural or racial variables would impact the ways individuals attempt to reduce uncertainty. "Given uncertainty reduction theory's level of generality, its scope should extend to explaining communication across cultures, as well as communication between people from different cultures" (p. 23). Their research concluded that uncertainty reduction theory needed to include boundary conditions and suggested that there are cultural differences in the use uncertainty reduction strategies.

Planalp and Honeycutt (1985) decided to take a reverse look at uncertainty to see what the affect would be on a relationship when uncertainty increased. The study's results questioned "the assumption that social actors learn to function effectively in the social world by gradually building increasingly elaborate and sophisticated knowledge of other people and relationships" (p. 601). In other words, despite the maturity of a relationship, it is possible for uncertainty to increase if the information received is inconsistent with established knowledge.

Abandoning the previous macro-level view of uncertainty reduction, Brashers (2001) expressed a need to peel back the layers of uncertainty to reveal the complexity of how people respond to uncertainty. He argued that in addition to being multilayered, uncertainties were also interconnected and could be either short-lived or ongoing. Brashers continued in saying that people judge the meaning of an event based on its relevance to them and any information received can be manipulated to manage uncertainty in a specific direction. Individuals can choose whether to seek out information or to avoid it all together.

Applying Uncertainty Reduction Theory to Crisis Response

Berger and Calabrese's (1975) original uncertainty reduction theory focused attention on the initial phase of interaction between two people; however, the central components of uncertainty reduction theory can also be attributed to the novelty presented at the onset of a crisis. In its most generic form, a crisis can be defined as an unanticipated event that has the potential for negative consequences; however, Coombs and Holladay (2004) defined a crisis as "an event for which people seek causes and make attributions" (p. 97). Further, in the case of an organizational crisis, stakeholders will seek out explanations as a way to reduce uncertainty surrounding the incident. Could this have been prevented? What, if any, were the warning signs? Coombs (2007) best described the role of uncertainty in a crisis as "the amount of ambiguity presented in a problem—the larger the amount of ambiguity surrounding a crisis, the greater its uncertainty. People are drawn to and have a need to reduce uncertainty" (p. 107). A closer look at uncertainty reduction theory's relevance to crisis communication reveals that self-efficacy and explanation messages can help alleviate stakeholder uncertainty:

Self efficacy—Reducing uncertainty through a sense of control.

Crisis communication researchers Reynolds and Seeger (2005) defined efficacy as "the effectiveness or feasibility of the behavioral change in alleviating the threat," and self-efficacy as "the belief that the recommendation can be carried out" (p. 45). By attempting to understand the uncertainty surrounding a particular crisis, practitioners can address the perceived threat and pair a response with messages of self-efficacy in order to persuade a change in behavior. Existing literature (e.g., Goldsmith, 2001; Reynolds & Seeger, 2005; Seeger, 2006) recognizes efficacy as being critical to the effectiveness of crisis communication and is key to providing a sense of control during a time where it seems that ambiguity and potential for harm run rampant. Seeger

(2006) noted that messages of self-efficacy should embody one or more specific characteristics: 1) offer harm-reducing actions, 2) recommend a range of activities, or 3) provide meaningful relevance to the public, even without verifiable benefit.

Explanation—Reducing uncertainty through sense-making.

Beyond using specific recommended tasks to create a sense of control, uncertainty can also be reduced through attempts to make sense of an environment, as well as efforts to explain what happened, how the crisis occurred, who is responsible, and ultimately, what steps need to be taken to prevent potential harm. Dutton (1986) argued that in an organizational construct crises result in questions surrounding the legitimacy of an institution, and in combination with uncertainty, create demands for explanation. For those in positions of power "explanation is a way of preserving rational appearance in the wake of evidence to the contrary" (p. 509). Enacting a cause-and-effect approach to explanation can also be effective in explaining how something occurred and then predicting the consequences of an action (Reynolds, 2002). In addition to organizations attempting to explain in the midst of a crisis, individuals are also searching for ways to make sense of what has occurred.

A Mobile Technology Society

A basic understanding of current landscape about how our nation is rapidly becoming a mobile society is required to discuss mobile technology use as a means to reduce uncertainty within a crisis. Currently, it is estimated that 59 percent of American adults access the Internet using some form of a wireless device (Smith, 2010). Mobile technologies, such as mobile networks and telephones, enable users to abandon static forms of communication such as personal computer desktops or telephone landlines.

Mobile Networks

Since their commercial introduction in the 1980s, mobile telephones have progressed through a series of network standards. Today, 96 percent of mobile subscribers already have 3G—or third generation—standards (O'Dell, 2010). The first 3G mobile devices, which were launched worldwide in 2001 (Purvis, 2001), have been credited as a key factor in the success of the mobile web (O'Dell, 2010). Looking to the years ahead, data services on mobile devices are expected to increase by nearly 4,000 percent by 2014 (Ingram, 2010). Undoubtedly, mobile carriers will be scrambling to keep up with this insatiable demand. Not surprisingly, a few providers have already begun touting the introduction of a 4G network—one that has a larger capacity for data transactions, which enables customers to download pictures, videos and other large files in only a matter of minutes (Bailey, 2010).

Mobile Telephones

New mobile technologies such as tablet computers and e-readers appear to be gaining popularity among early adopters; however, it is the cellular telephone that is considered most prevalent among mobile network subscribers. It is estimated that nine in ten 18-29 year olds own their own cell phone and are frequent users of data applications such as text messaging, photo sharing and accessing the Internet (Smith, 2010). Nationwide, mobile phone penetration in the United States is expected to reach 100 percent by 2013 ("Getting to Know" 2009). A growing market for mobile carriers is the smartphone, which according to PC Magazine, is defined as cell phones "with built-in applications and Internet access." The definition continues by noting that "smartphones provide digital voice service as well as text messaging, e-mail, Web browsing, still and video cameras, MP3 player and video and TV viewing" (Smartphone Definition, para. 1).

With such a variety of data applications at their disposal, it is no wonder that market analysts predict that within the next three to five years the majority of Americans will purchase wireless carrier services more for the ability to be online and less for the ability to place a call (Baekdal, 2008). In fact, only 45 percent of the time spent by the average iPhone user is for actually conducting telephone calls (O'Dell, 2010). Other demonstrations of the explosive growth of mobile technology include mobile applications and the changing role of mobile applications in traditional and new media outlets.

Three Levels of Mobile Reciprocal Communication

Public relations practitioners can embrace new mobile technologies as an opportunity to improve industry best practices. In 2003, Covello recognized coordinating, collaborating and partnering with other credible sources as one of seven best practices for developing risk and crisis communication campaigns. This assumption still holds true under the study of mobile technology, but these new communication channels reshape our understanding for how information is shared during a crisis (Tinker & Vaughan, 2010). To better understand these evolving best practices, let's examine three different levels of reciprocal communication that occur when mobile technology is used during a crisis: between responder and responder; between responders and at-risk publics; and from one citizen to another.

Between Responder and Responder: Facilitating Intelligent Crisis Response

When crisis response managers find themselves in the midst of a crisis, gathering information from a variety of sources and alternate agencies can be the deciding factor in whether or not the response plan is successful. Yuan and Detlor (2005) argued that mobile communication is vital to implementing an intelligent crisis response system—one that is dynamic and flexible. "This involves the use of state-of-the-art IT distributed over a network of

mobile devices that remains active and alert, monitors the environment, and communicates and collaborates with users and with other systems" (p. 95).

When communication occurs between agencies, not only are geographic boundaries of concern but also so are organizational boundaries. Kapucu (2006) recognized this challenge stating "leaders of responding agencies must provide effective operations across governmental units and other non-crisis organizations' complex boundaries and problems" (p.218). Comfort and Kapucu (2006) seconded this notion stating that inter-organizational communication during a crisis requires development of a communication infrastructure that can accommodate an intense demand for information gathering and rapid decision-making. Mobile technology, with its ability to coordinate across jurisdictions and facilitate information exchange, is a solution for working across organizations to help match skills with tasks and coordinate response efforts.

For a more practical example of how emergency responders can benefit from mobile technology, Pawling, Schoenharl, Yan and Madey (2008) partnered with the National Science Foundation to develop WIPER—short for Wireless Phone-based Emergency Response System. It is a data-mining prototype that uses cell phone data to detect crises before—or as—they occur. Because cell phones must periodically report their presence to nearby cell towers in order to place calls, the researchers hypothesized that the data collected by the cell phone carriers could be analyzed for familiar patterns in group behavior. In theory, the WIPER system could be activated in a disaster area to identify the location of cell phone users; detect traffic jams, roving crowds and emerging call patterns; and use computer simulations to evaluate possible mitigation strategies such as evacuation, barricading or other solutions. Communicated via a web-based console, emergency responders would then have access to real-time information as it unfolded (Schoenharl, Bravo & Madey, 2006).

Between Responders and At-Risk Publics: Implementing Two-Way Communication

In the past, situations where disasters were either natural or man-made consisted of a one-way, top-down flow of messages between responders and at-risk publics. Recent events and ongoing research suggest a seismic shift in how information is shared between these two groups. In an online survey conducted by the American Red Cross (2010), 74 percent of respondents expect agencies to answer calls for help made through social media channels.

Text messaging also played a critical role in response efforts following the January 2010 Haitian earthquake. The magnitude 7.0 quake knocked out electricity, disabled landline communication and blocked many streets with the rubble of flattened buildings (Romero & Lacey, 2010). In the weeks that followed, FrontlineSMS, a two-way text-messaging platform, processed more than 80,000 messages from scattered quake survivors. Using geo-location software, their team was able to map latitudes and longitudes for search and rescue requests (Buckley, 2010). Another response group that was active on the ground immediately following the earthquake is the Thomson Reuters Foundation. They delivered information to survivors in both English and Creole for practical issues such as where to find an operating hospital, how to purify drinking water or how to register a missing person (The Guardian, 2010).

From One Citizen to Another: Encouraging Citizen Participation

In the critical seconds following an incident, those individuals who are already on the scene find themselves as the true first responders. The implication that mobile technology has on the dynamic between a formal crisis response and a now-participatory public is that the "idealized, linear depiction of information dissemination around crisis events from authority to news media to the public is clearly outmoded" (Palen, Hiltz & Liu, 2007, p. 57). Mobile technology enables citizens to report experiences as they happen, share life-saving knowledge

when seconds count, and even use text and picture messaging to share information they could not obtain from authorities. “The open digital environment holds out the promise of a new framework for creating and supporting public media—one that prioritizes the creation of publics, moving beyond representation and into direct participation” (Clark, 2009, p. 11).

One such example of direct participation includes the community response to the 2007 southern California wildfires. While acknowledging that grassroots efforts for responding to (and evacuating) affected areas during a disaster has always existed on some level, Sutton, Palen, and Shklovski (2008) surveyed 279 California residents to see how technology influenced their information gathering and sharing activities throughout the duration of the fires. With regard to mobile technology, 92 percent of respondents owned mobile phones and 54 percent indicated that they sought information or contacted friends and family using those phones. Perhaps most interesting; however, is the perception of the respondents that traditional media was not specific enough to their needs, was too sensational or even at times inaccurate (Sutton, Palen & Shklovski, 2008). In this situation, the public had taken it upon themselves to take action and seek out the information they were missing.

Another phenomenon created by citizen participation is the shifting tide of who exactly reports breaking news. Take for example the 2008 earthquake in China where nearly 70,000 people perished (Associated Press, 2008), the Mumbai Terrorist Attacks where more than 10 coordinated shooting and bombing assaults occurred over a two-day period (Sengupta, 2008), or the 2009 ‘Miracle on the Hudson,’ where U.S. Airways Flight 1549 made an emergency landing in New York’s Hudson River (MSNBC.com, 2009). Though each of these occurred in separate places across the globe, all three shared something in common: mobile phone users logged onto Twitter—a social networking application—and broke the news before any reports hit traditional

media. The latter of these three incidents—the emergency landing in the Hudson River—was announced on Twitter a full 15 minutes before traditional media (Beaumont, 2008; Beaumont, 2009). That is an incredible amount of time when there is a need to send in immediate help or get survivors out quickly.

Discussion

Whether it is between responders, between citizens, or a combination of the two groups, communication that occurs via mobile technology undoubtedly cultivates personal relationships and reciprocal communication methods that are characteristic to those outlined within uncertainty reduction theory. Interagency communication facilitated by mobile technology can break down organizational and geographical boundaries to better match skills with specific tasks. Agencies tasked with disaster relief can embrace two-way communication with at-risk publics as way to better tailor limited resources and speed-up response times. Citizens who are mobilized as a source of information in the event of disaster can make sense of their surroundings and maintain some level of control in the midst of chaos. Liu et al. (2008) described it fittingly by stating that "in an increasingly digitally connected society, we see the rise of a participatory culture that facilitates, over a broader reach and in new forms, activities of collective sensemaking" (Disaster Convergence section, para. 2). Collective sensemaking is truly what mobile technology enables. Responders make sense of the situation with the help of citizens, and citizens make sense of the situation with the help of responders. Ultimately, engaged publics who possess a sense of ownership in a situation will also have increased satisfaction for how the response effort was coordinated (Kweit & Kweit, 2004).

The most significant implication this research has upon the public relations industry is that laggard practitioners can no longer ignore mobile technology as a critical component of their

crisis response plans. As was demonstrated, many audience segments have already embraced the technology. For those that have not yet adopted mobile phones, the percentage of mobile subscribers is expected to grow in the near term. Also, many individuals have expressed an expectation to be able to reach out to authorities for help using social media channels. Given these trends, practitioners must develop a consistent presence, both online and within mobile applications, while continuing to use traditional forms of media. Over time, the symbolic reciprocity that is created as a result of those long-term relationships will help practitioners reduce risk and uncertainty by providing evidence that they are reliable and trustworthy.

There are limitations associated with mobile technology use during a crisis. While a large number of adults do currently have cell phones or smartphones, only 35 percent have actually used their phones to access the Internet (Raine, 2010). Also, when looking at the average Twitter user, most are young and live in urban areas (Lenhart & Fox, 2009). Obviously with this discrepancy in audience reach, mobile technology cannot *replace* traditional crisis response outreach methods, but rather supplement it. Nonetheless, more research is needed to determine how practitioners can incorporate mobile technology into their crisis response plans.

Conclusion

For years, crisis managers and responders have found themselves in a battle to beat the clock—forced to embrace uncertainty and make decisions based on imperfect knowledge. The adoption of mobile technology, as a way to reduce uncertainty during a crisis, presents a new era of study where crisis managers are empowered with real-time information and fewer boundaries; where responders and at-risk publics subscribe to a reciprocal relationship for sharing information, and where publics become invested and engaged in crisis response efforts.

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