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Technology Adoption and Use in the Aftermath of Hurricane Katrina in New Orleans

Irina Shklovski,[1] Moira Burke,[2] Sara Kiesler,[2] and Robert Kraut[2]

Abstract

Disasters are threatening and highly dynamic situations, marked by high levels of information need and low levels of information availability. Advances in communication technologies have given people more ways to seek information and communicate—a redundancy that can help people cope with disaster situations and support subsequent recovery. This article presents results from a longitudinal study of New Orleans musicians in the aftermath of Hurricane Katrina. The authors found that in the immediate aftermath, musicians used cell phones and the Internet to locate family and friends and obtain information unavailable in broadcast news reports. Seeking and redistributing information resulted in the creation or discovery of online spaces that became virtual instantiations of the physical environments from which the musicians were barred. For those who had to leave New Orleans, these online spaces helped them maintain connection with their local communities. As recovery continued, many musicians discontinued or adjusted their use of technologies that did not fit the cultural and social context of their everyday lives. Those who returned to New Orleans focused their energies on rebuilding, often eschewing mediated communication for New Orleans–style in-person interaction. Those who remained away found that digital connections to the New Orleans community were insufficient to maintain a sense of belonging.

Keywords

community, communication, disaster recovery, place attachment, New Orleans

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We're watching the city kind of crawl to its knees. It hasn't gotten to its feet, but it's trying, I guess.

—Ann, New Orleans

Hurricane Katrina, a Category 5 catastrophic storm, hit the Gulf Coast on August 29, 2005. It breached the levees and flooded New Orleans, Louisiana, causing substantial damage and massive evacuations. As the water receded, the city started its torturously slow recovery. Katrina disrupted community-sustaining processes by dispersing community members without regard for friendship and family ties and by damaging the existing communication infrastructure. Recent research has highlighted the positive role of new communication technologies, such as the Internet and cell phones, in how people cope with the initial fallout of disasters (Hagar, 2009; Palen, Vieweg, Sutton, Liu, & Hughes, 2007; Procopio & Procopio, 2007; Sutton, Palen, & Shklovski, 2008). Two issues have received less attention. First, disaster informatics has focused primarily on individual response, but disasters also affect communities, whose coherence and resources are fundamental to coping long-term with disasters (Kaniasty & Norris, 1993). Second, much disaster research has focused on immediate response, using quick-response research techniques. Yet disaster recovery is a long-term social process (Mitchell, 1996; Nigg, 1995), and the role of communication technology in this process is likely to differ from that in immediate response.

In this article, we report results from a longitudinal study of a New Orleans community of musicians in the aftermath of Hurricane Katrina. We chose musicians for several reasons. First, at the time of Katrina, New Orleans musicians formed a profoundly local culture and community of practice with intense connections to physical places in the city and to unique music traditions (Berry, Foose, & Jones, 1986). Katrina forced citizens to leave New Orleans, and it destroyed homes and places of work. As such, we thought that this dislocation would have seriously threatened New Orleans musicians' place-based culture and livelihood. Second, musicians are highly interdependent and rely on extensive interaction with their personal and professional networks for their livelihoods (Kruse, 2003). Given the inherent mobility of their work practices—arranging and playing gigs in clubs and other venues—we thought that they would likely use communication technology to help maintain these connections. Third, many musicians are technologically savvy, using complex instrumentation and technology when they perform and record music. Thus, we thought that this group would actively use information and communication technology in the aftermath of the hurricane.

New Orleans musicians therefore presented a relevant sample for the study of technology and community. Even though New Orleans musicians are not representative of everyone affected by Hurricane Katrina, we expected to observe patterns of communication technology use that would be indicative of future patterns in disaster. In this article, we first discuss how musicians adapted available technologies to cope with the information dearth immediately after the disaster. We expand on what is known about how people use technology to reconstruct their social networks and reaffirm their

sense of community. We then discuss how musicians used communication technology during the long recovery period. Our study builds on disaster informatics, community computing, and place attachment research to provide a better understanding of the role of communication technologies in how people affected by disasters cope with initial displacement from their geographic communities, with subsequent reconstitution of these communities, and with the long-term trauma from the damage wrought by the disaster.

Importance of Local Community

Communities are collections of people held together through time, ongoing communication, and common social attributes, practices, and goals (Bell & Newby, 1972; Wellman, 1979; Williams, Zinner, & Ellis, 1999). Local place-based communities, such as towns, neighborhoods, and blocks, are important forms of community—social structures that provide a sense of belonging for members and that help to maintain the broader societal fabric of social capital (Baumeister & Leary, 1995; Forrest & Kearns, 2001; Putnam, 2000). On average, people care and attend more to one another in local places than in distant places (e.g., Latane et al., 1995). People even mentally represent local places differently from faraway locations—that is, more concretely, with more detail and context (Fujita, Henderson, Eng, Trope, & Liberman, 2006). They imbue local physical places with personal sentiments and social memories, which through time become part of their individual and community identities (Hummon, 1992; Proshansky, Fabian, & Kaminoff, 1983). A unique locale can contribute to development of community attachment and a sense of belonging (Low & Altman, 1992).

Advances in information and communication technologies may have changed local communities, although these effects are still being investigated (Kavanaugh, Reese, Carroll, & Rosson, 2005; Wellman, Quan Haase, Witte, & Hampton, 2001). As information and communication technologies permeate all aspects of life, the boundaries between online interactions and physical presence and proximity blur (Hampton & Wellman, 2001). Online city resources and town Web portals have increased civic engagement and participation in some preexisting geographical communities (J. Carroll et al., 2006). The spread of local broadband telecommunications has encouraged a greater sense of community in some neighborhoods (Hampton & Wellman, 2003). At the same time, people are increasingly able to join distant or distributed communities online. However, despite the advances of communication technology—which has fostered thousands of online, nonlocal communities—the physical locale continues to be important for people's security, sense of well-being, and community attachment (Mesch & Manor, 1998). One difficulty in studying the effects of technology on local community is that physically bounded communities comprise many institutions, social networks, and cultural contexts, which change slowly through time. Attachment to place-based community is developed slowly and often unconsciously such that people tend to take their communities for granted as they go about routines of daily life (Brown & Perkins, 1992). Early studies of the telephone and the automobile show that

it is difficult to detect the impact of a new technology on community processes (de Sola Pool, 1977).

Disasters disrupt community processes and people's usual means of communicating and obtaining information. We used the disruption of a natural disaster to follow trajectories of adoption and use of available communication technologies by individuals and by affected communities as they worked toward reconstituting themselves and recovering their members. The creative adaptation of technologies for coping with crisis provides a lens on the role of familiar and new technologies in community processes.

Technology as a Community Resource

Communication technologies can serve as community resources. Individual communication technologies, such as cell phones, e-mail, and instant messaging, connect family members, friends, and coworkers and have become indispensable in everyday life (Hoffman, Novak, & Venkatesh, 2004). They are often used during disasters to cross time and space (Palen & Liu, 2007). In Katrina, the disruption to voice landlines and cell phones forced people to improvise by adopting technologies new to them and by using familiar technologies in creative ways (Procopio & Procopio, 2007). We theorized that once discovered, these adaptations might continue during recovery.

We conceptualized community-oriented resources as technologies developed by and for communities, such as community portals, neighborhood Web sites, and local discussion lists, as well as local government sites, small local newspapers, and databases of local homeowners and taxpayers. Prior research on technology use in communities suggests that those who actively participate in community activities are likely to use such community-oriented technologies and benefit from them (J. Carroll et al., 2006; Hampton, 2003). In a study of a "wired suburb," Hampton and Wellman (2003) observed how neighborhood residents used a community discussion list for introducing neighbors to one another. The list proved pivotal in encouraging collective action during a dispute with a developer, although its use declined once the neighborhood stabilized. This observation suggests that community-oriented resources may play a special role during disruptions. How geography-bounded communities adopt such technologies and whether these technologies are integrated into the fabric of community life remain empirical questions.

Communities in Disaster

Most people take their homes and communities for granted and expect them to remain stable (Hummon, 1992). When the physical place that people care for is threatened, the threat is often experienced as catastrophic, and the locale rapidly grows in importance (Brown & Perkins, 1992; Hagar, 2009; Janoff-Bulman, 1992). A large-scale natural disaster that impels evacuations and causes substantial physical damage

shocks individuals and whole communities, creating stress, anxiety, grief, and uncertainty about the future (Williams et al., 1999). Natural disasters are also information disasters. Communication infrastructure is often damaged, and the flow of information obstructed, when and where it is most needed (Sood, Stockdale, & Rogers, 1987). Disasters that result in evacuations cause people to seek information to relieve uncertainty about families, friends, and neighbors in the affected locations and about the fate of physical places they care about (M. Carroll & Cohn, 2007; Drabek & Stephenson, 1971; Mileti & Darlington, 1997). Television, radio, the Internet, and phones help disaster victims feel connected to the rest of the world despite the horror of their situations (Perez-Lugo, 2004). Indeed, the promise of being informed and connected seems to motivate high rates of communication technology adoption and appropriation in times of disaster (Sutton et al., 2008).

Successful response and recovery require flexibility and innovation from communities and individuals alike (Wachtendorf & Kendra, 2006). Disaster researchers have reported that those affected often take the initiative in offering help to one another (Kaniasty & Norris, 1995). In some cases, individuals take on leadership roles in community recovery processes, making heroic efforts to organize and provide help on-site (Barton, 1970; Kaniasty & Norris, 1995). In other cases, community recovery happens organically through communication among residents, often via mediated means (Procopio & Procopio, 2007; Shklovski, Palen, & Sutton, 2008). Advances in communication technologies have enabled residents of affected areas to congregate and organize online before they could return to their neighborhoods and get help from volunteers on-site (Shklovski et al., 2008; Torrey et al., 2006). Access to communication technologies and the ability to organize online could also enable individuals and communities to get help in the longer course of recovery.

To study technology use in the context of community, we conducted a qualitative study of New Orleans musicians in the wake of Hurricane Katrina and followed up a year later. In conducting this study, we focused on the issues that these residents encountered as they used individual- and community-oriented technologies to cope with the aftermath. Our main research question was whether the availability of mediated communication played a role in how musicians recovered their personal ties and reconstructed their sense of community both in the immediate aftermath of Katrina and in the long term as they rebuilt their lives.

Method

New Orleans is known for its unique music culture and many musicians. Like other residents, many of these musicians were forced to relocate and were unable to return. Despite the devastation and dislocation, in the following spring many New Orleans musicians and music professionals, even those who had not yet relocated to the city, attended and performed at the city's annual Jazz and Heritage Festival. This special event gave us a unique opportunity to contact and interview musicians and music professionals who were still living elsewhere, as well as those who had already returned.

Thus, this study focused on New Orleans musicians who did and did not return to the city within the first year after the hurricane.

We conducted 40 interviews in New Orleans in late April and early May 2006. Some musicians had been contacted earlier by e-mail or phone; others were found opportunistically at clubs and the festival grounds or were referred by friends. Teams of two researchers conducted semistructured 45-minute interviews. The interviews concerned what respondents did to cope with the storm; how they kept in touch with family, friends, and other musicians; and whether and how they used information and communication technologies before, during, and after the hurricane. We asked about their uses of face-to-face contact, mobile phones, and the Internet as means of response and connection with others during and after the storm. We did not explicitly focus on communal feelings and community-related practices but allowed these themes to emerge in the stories respondents told us. A year later, in May 2007, we reinterviewed 33 of the original 40 respondents.

Participants

Our sample of 40 included 34 working musicians, from internationally known performers to local musicians who played gigs part-time. We also interviewed 6 music professionals—2 local record-label owners, 1 local radio DJ, and 3 others intimately involved with the New Orleans music scene. All but 2 respondents had evacuated during Katrina, and 26 had returned to New Orleans at the time of the first interview, in 2006. By the time of the second interview, in 2007, 4 more had moved back to New Orleans. Two respondents who had returned to New Orleans at the time of the first interview had moved outside Louisiana by the second interview. Our sample included 11 women and 29 men, aged 20 to 66 (average, 42). Twelve were born in and spent most of their lives in New Orleans. The rest lived there between 2 and 33 years before Katrina (average, 14 years). Of the 40 interviewees, 34 used a cell phone before and after the hurricane; 5 started using a cell phone only after the hurricane; and 1 did not own or use the technology. All but 1 reported using the Internet for information and communication before and after the hurricane.

Analysis

All interviews were audio-recorded and transcribed. Following the methods of qualitative data analysis suggested by Emerson and colleagues (Emerson, Fretz, & Shaw, 1995), we developed a coding scheme based on open coding of transcripts and field notes. Our initial purpose was to investigate the uses of information and communication technologies for maintaining personal and community connections during and immediately after the hurricane and during the subsequent year between interviews. We combined the open codes into themes distinguished by period (during evacuation, recovery, long term) and technology-use orientation (personal, interpersonal, community oriented). Relevant references from each transcript were combined and summarized

to form a coherent narrative for each theme. These summaries then allowed a look at the bigger picture. Evidence of orientation toward community and what Shklovski and colleagues (2008) called "finding community" was prominent in the data. The longitudinal nature of the study allowed us to see community reconfiguration during the long-term recovery. All representative quotes presented here are reproduced as spoken, with the respondent's residence at the time of the interview indicated. Names were changed to preserve confidentiality.

Immediate Response

Hurricane Katrina crippled transportation networks and routine telephone and cell phone communication. In the confusion of the massive evacuations from the New Orleans area, families and friends lost track of one another. Few evacuees had expected to be gone for more than a day or two. They did not make arrangements to contact one another, and they had no information on the whereabouts and well-being of their families and friends for days afterward. One respondent described her inability to get in touch:

> I knew [my best friend had] been in horrible traffic, because we just knew how bad it was getting out, and I couldn't talk to her for a week. It was really horrible. I couldn't find my drummer either, for a long time. (Natalie, New Orleans)

Not knowing the situations of those whom they cared for created additional stress at a time when people were uprooted and their homes were damaged or destroyed. This need drove respondents to improvise and find information in any way possible.

Finding People

Learning the well-being and location of friends and family quickly became a priority. The storm severely damaged the communications infrastructure through line breaks, damage to base transceiver stations (for wireless capabilities), and power failures. People who owned mobile phones with a New Orleans area code discovered that although they could in some cases make outgoing phone calls, they could not receive calls. They also soon realized that text messaging on their phones worked ("Katrina Outages," 2005).

Despite problems with voice service, respondents perceived mobile phones as being central to their ability to find information and stay in touch after the hurricane. As one respondent explained, "those that didn't have mobile phones got mobile phones because you couldn't communicate without mobile phones" (Rob, New Orleans). The majority of respondents described text messaging as their only form of communication for several days after the disaster: "It was real tough for a while. . . . I kept trying to call people and we found out really quickly that mobile phones weren't working, so we went to text it, and text messages do work" (Kate, Houston, TX). Although some respondents used text messaging before Katrina, the majority adopted the practice

afterward. Kate commented, "Most of my friends . . . didn't even know how to answer a text message or what it was . . . until the hurricane." As the need for communication mounted, respondents willingly adopted practices that were new to them: "I had never text messaged before in my life, and then I figured out that was how we could communicate" (Natalie, New Orleans).

Text messaging was not the only means used for making contact. People with out-of-state area codes began to serve as information hubs because their phones accessed other cell towers and, thus, their calls worked in both directions: "A lot of people were actually calling me to check up on other people because they could get a hold of us" (Lilly, New Orleans). Two respondents owned BlackBerry mobile phones, which remained operational despite the hurricane (Shaw, 2005). They were instrumental for getting friends and family in touch:

> Everybody else's phone wasn't working, so everybody could get through to me, but they couldn't get through to everybody [else], and everybody would call me, and then once I talked to everybody, I exchanged numbers, and tell them where this person is, and they'd call them up. (Andrew, New Orleans).

Many relied on the Internet. One respondent, a part-time schoolteacher, learned via e-mail that several of his students from the Ninth Ward had found one another:

> I had the e-mails of a couple kids, and I e-mailed them and got nothing back. We're talking about the poorest people, of course, so I didn't expect to get much back. . . . [Then] I started hearing back from them, and you know they're really technologically advanced, so they're . . . e-mailing each other and instant messaging . . . and they sent me an e-mail back with like "These 40 kids are here." That was good for my soul to get that, like "My children are OK." (Dave, New Orleans)

Six respondents had evacuated with their laptops. The portability of the laptop allowed them to retain some routine communication amid upheaval. As one explained, "you just close it [the laptop] and leave with it, and you have all the e-mails with you, and so we could communicate with people that way" (Ned, New Orleans). Not everybody had easy access to the Internet. Respondents described using friends' computers, libraries, and Internet cafés to access e-mail. One respondent explained, "I was in Lafayette trying to use the computers at the library . . . 'cause I don't know if my friends are alive" (Kurt, New Orleans).

Despite these efforts, many people were difficult to find. As word of who was alive and what their location was traveled via text messages and e-mail, some people found themselves inundated with messages, whereas others were unable to contact anyone. Some watched television in hopes that broadcasters would interview friends or family who stayed behind. Others took matters into their own hands. Three respondents who found themselves in the position of information collectors had access and the

technological know-how to create Web sites with "safe lists" of people who had checked in. One employee of the local New Orleans radio station explained the impetus for creating the safe list:

> To reduce the amount of e-mail I was getting . . . I just ended up starting to put a huge list together of all the musicians and staff and volunteers that we knew were all right. And it started to work. The response was really overwhelming. . . . People were . . . really thanking us for that. (Kurt, New Orleans)

Two New Orleans musicians who owned a small Web-development company and who had evacuated to the New York area organized another such list. At first, it was a list designed just for friends, but it quickly ballooned to hundreds of postings. One musician explained,

> We actually set up a place where we could go and register their location, e-mail, and it was just for our friends because . . . everybody's cell phone went out. We e-mailed some people and then they told other people and then . . . pretty soon 500-600 people. So that was my little contribution to the relief effort. (Bob, New York City)

The ability to contribute to the relief effort gave these musicians a sense of purpose and control over the situation.

News of the list traveled across personal and professional networks. A respondent described how she found out about this list:

> I went online when I got [to evacuation location] and just started e-mailing everyone I possibly could and got e-mails back from people saying, "Go to this site, we're making a database of who's where and with whom and in what condition." (Ann, New Orleans)

Musicians described expending a lot of energy to find one another. These efforts served to not only reduce stress but also regain a sense of interconnectedness and community in evacuation. One respondent explained why he repeatedly checked back with a locally developed safe list: "You realize when you're looking at this list, New Orleans is the type of place where . . . wow, I actually have hundreds of friends here because you're looking at a list and . . . I know so many of these people" (Bob, New York City).

Whereas some with Internet access set up lists, others looked up information for those who did not: "People who didn't have the Internet, they knew someone who did, and would find out that they needed information and would say, 'Oh, I will look it up for you'" (Kate, Houston, TX). The safe lists not only provided vital information about the safety and whereabouts of friends and family but created a sense of community presence and hope. One respondent said, "So if we had not had the Internet, the Internet,

really, really saved us all. It kept us in touch with each other, to find people" (Darren, Mobile, AL). Those who posted their contact information and whereabouts on the lists increased their chances of not only hearing from others they cared about but also reestablishing their connection to their local community. Being found and knowing others who were found created a sense of mutual presence despite the distances attributed to evacuation.

Finding Information

Although contact with friends and family was crucial, respondents wanted to know what happened to the city and to particular neighborhoods. Coverage of events in New Orleans on television, radio, and newspapers was extensive, but respondents found it not specific enough. Media sensationalized disaster coverage at the expense of providing information of interest to those affected (Sood et al., 1987). One respondent expressed his frustration: "24-hour news . . . and they don't tell you anything, they're showing these devastated flooded areas . . . and they don't know what the information is" (James, New Orleans). Sensational reporting also led to misinformation and further stress:

> CNN kept showing that picture over and over again: the wall falling out, so you could see in all the rooms of this house, and that was just a few blocks away. But in reality, that was not representative of the damage in the neighborhood. But then again, we didn't know that, and . . . [that was] the scariest thing. (Jim, New Orleans)

Residents wanted to know whether there was water in their neighborhoods and how high it rose. The Internet proved more useful than mass media. Many reported finding eyewitness accounts online and helpful online maps and satellite images:

> Also we checked a lot of the satellite photos to see where the water levels were at. Like we were able to get a picture of our neighborhood and see if we could see any cars so we knew that the water was flooded to the car line. That was a big one, just catching up to see where the water levels were at. (Lilly, New Orleans)

In this case as well, those who had access to the Internet became information hubs, distributing to others what they found out via cell phone calls, text messaging, and e-mail. For example, one respondent became a source of information for friends and family:

> I stay on the Internet about 18 hours a day in Lake Charles. Slept 6 hours and I got back on the Internet, I looked at blogs and everything. It was really funny because I couldn't call them on the phone but they would receive my texts. And so people depended on me to read Web sites and see what was going on in New Orleans. (Paul, New Orleans)

These frequent communally oriented behaviors emerged in the digital space as respondents tried to make sense of their shattered worlds, using the digital connections to bridge time and space, to exchange information, and to provide support.

Respondents also talked about more sophisticated community-based online spaces developed by local organizations. The local newspaper *New Orleans Times-Picayune* ran a Web site (http://www.nola.com) that featured a set of discussion boards arranged by neighborhood (Glaser, 2005). More than half of respondents mentioned finding at least some of their information here: "That was real pivotal help. That was more neighborhood-specific. . . . You could go into message boards kind of thing that were . . . neighborhood specific and find out what was going on" (Jim, New Orleans). This kind of digital connection to a community was not only functional but also emotional. As the *Times-Picayune* added discussion boards for more affected neighborhoods, residents expressed gratitude ("It's so good to be recognized as a neighborhood," Ali, New Orleans), as if each new board were a marker of the importance of the neighborhoods decimated by Katrina. Respondents also mentioned other digital community resources: "We have a really good midcity neighborhood organization that was very well organized, and they had, somebody would come back and take pictures, you know, with a police escort and report back on the Web" (Kate, Houston, TX). The use of *we* in the quote illustrates how such neighborhood lists and Web sites—the virtual instantiations of physical neighborhoods—were paramount not only for gaining information about personal property but also for regaining a sense of identity and belonging to the damaged community through exchanges of support and expressions of commitment.

Long-Term Impact

In the hours after the disaster, the need to communicate took precedence over routines and preferences for communication media. People needed information, and it did not matter how they got it. They learned text messaging, discovered new resources on the Internet, and acquired cell phones and laptops to support greater mobility. One criterion of technology success is its "stickiness"—that is, if a technology is useful, people will incorporate it into their everyday lives (e.g., Cummings & Kraut, 2002). However, if people use a technology such as texting to cope with a disaster, we might not expect them to continue using such technology if it is inconvenient or does not fit well with everyday routines. We followed up with the musicians to learn what they were still using a year later and how they thought about the technologies they used during the crisis. We also investigated their sense of community belonging and whether community-oriented resources continued to play a role in recovery processes.

Technology Integration Into Daily Life

During the second round of interviews, in May 2007, more than half the respondents had integrated the new communication modalities into their daily lives, even switching to

handsets that offered better text-messaging capability: "I had a horrible phone before that to text . . . so I switched phones, I got a better phone, and now I'm getting very good [at texting]" (Natalie, New Orleans). The disaster experience had taught many that text messaging worked better than voice calls when reception is limited—a lesson casual users rarely learn: "Now everybody's hip to the text message, if you can't get through" (Kate, Houston, TX). Although nearly all respondents from New Orleans lamented that problems with cellular reception had forced them to reacquire landlines, none were willing to give up cell phones outright.

Such integration of new individual-based technologies into daily life was not true of all, however. Once the immediate needs brought on by disaster had passed and the infrastructure was repaired, some musicians returned to technologies that they saw as being easier to use and more reliable on a daily basis. Nearly a third of respondents stopped using text messaging once mobile phone service became more reliable: "Text messaging . . . now it's like, why bother, man? Just call" (Jason, New Orleans). Musicians who worked with computers to create music or art saw laptops as being useful for accessing work-related data and keeping connected when on the move. However, usability and reliability often favored their reacquiring desktop computers. Although all respondents saw mobile technology and the skills they had gained through necessity as being useful and important for their future coping with adversity, some relegated them to their emergency response kits: "I will definitely need to brush up on that [texting]. . . . [It's a] great emergency technology" (Dan, New Orleans).

Community-organized resources also had variable sustainability. The oldest of the *Times-Picayune* boards flourished and continued to display activity, but many of the newer boards became dormant, with few if any new postings. In the neighborhoods that experienced huge destruction (such as the communities of the Lower Ninth Ward), volunteer and neighborhood associations developed their neighborhood-specific Web sites, with information for their residents and appeals for outside funding and support as these communities struggled to survive. In other communities, our respondents talked of focusing on physical reconstruction and reduced reliance on communication technologies beyond neighborly coordination of construction. Here physical presence became an indication of commitment.

Sense of Community

By the time of our second interview, in May 2007, the city had lost half its population and many of its musicians. The loss of musicians meant that bands and street scenes had changed or disappeared; historic clubs and restaurants closed and only some reopened; and the city's unique festivals got smaller. Nevertheless, musicians who had returned to New Orleans invoked an earlier era and expressed a strong, continuing emotional attachment to the city. As one respondent explained, "People are really connected to this city" (Darren, New Orleans), another echoed, "I still don't think I'm going to find any place that's as cool as this somewhere. . . . I just don't see how it's possible" (Andy, New Orleans).

Respondents also contrasted themselves to those living outside New Orleans: "If you live someplace else it must be because you can't live here or it must be because you just don't care where you live because if you cared you'd live here" (Ann, New Orleans). Many commented on how people "outside" just did not understand: "Yeah, it's New Orleans. It's not supposed to make sense" (Darren, New Orleans). Those musicians who had not returned tended to express anxiety about being away and losing their community identity:

> A lot of people are still in LA and Memphis and whatever, and they're kind of feeling the same thing, "Oh, I've lost my place here, I've lost touch," you know. So my fear is that the longer people are gone from New Orleans, the harder it is to come back. . . . Texas isn't bad, this is great. But nothing's like New Orleans. (Kate, Houston, TX)

Although Kate herself continued to actively participate in her community's Listserv, she too felt as though she was losing her "place."

Musicians living outside New Orleans, either by choice or circumstance, acknowledged that the city they knew before the hurricane was not the same: "New Orleans is like . . . what it was is gone. That can't recover" (Bob, New York City). Yet many who acknowledged the changes remained hopeful that through recovery the city would regain its uniqueness:

> It's coming back; it's not going to be the way it was. It's not saying it's going to be better than it was . . . it's not saying it's not going to be as good as it was, but it is going to be different. But it is coming back. (Kate, Houston, TX).

Of the expatriate respondents, three were still trying to rebuild their houses or were looking for affordable housing, and two had moved elsewhere with their partners but wanted to come back.

Work and Personal Ties

Musicians in our study understood the New Orleans music scene as a physical and cultural context infused with constant personal contact on streets, in clubs, and in homes. They fit their behavior to "how things are done here" at the expense of technological advances, and they streamlined ways of doing things. For instance, they did not use the Internet to get gigs or advertise them: "New Orleans is a very much like walking-to-your-house kind of place" (Kurt, New Orleans). For those who had not come back, this reliance of the music scene on in-person interactions presented problems for maintaining professional connections and status: "I feel like I've lost my place in the New Orleans music scene being gone so much, you know" (Kim, Houston, TX). Despite the technical savvy of musicians, the cultural context of the New Orleans music scene limited their ability to compensate for their physical absence with digital connections.

As one explained, "if you don't live somewhere, you're not really part of a scene there" (Bob, New York City).

A sense of loss formed a strong theme throughout the interviews as musicians lamented the absence of people who had been pivotal figures in the music scene—"It's still hard to imagine the city with no Nevilles, at least the elder generation of them" (Darren, New Orleans)—and the loss of friends: "You show up to a gig and there's your buddies, you know, but those [other] buddies are gone" (Gary, New Orleans). These people were part of the place to which respondents had grown attached—as important figures seen in the periphery and as personal social connections that contributed to the uniqueness of this environment.

Musicians who remained outside New Orleans (for financial reasons and otherwise) maintained phone and Internet connections with their friends and acquaintances in New Orleans. Yet mediated communication was not enough to assuage their sense of loss and maintain their sense of belonging. This inadequacy remained partly because the city was recovering, too, and those who came back had made a statement of commitment implying disloyalty in those who did not return: "[Not being here] is just not how we do things" (Ann, New Orleans). Their absence was lamented, and those feelings persisted despite technological connectivity. Bands whose members remained dispersed slowly fell apart unless distant members made gargantuan efforts to return to play, traveled frequently, and eventually moved back.

Musicians local to New Orleans acknowledged that they did occasionally search for their absent friends digitally:

> You find out through the grapevine, or you find out on MySpace that so-and-so is now in New York. They used to be in San Francisco. . . . Through their blog you find out that they've applied for an apprentice program or something, and then you comment and say, "Good for you, that's great, congratulations." (Ann, New Orleans)

Active communication via phones or e-mail was less common for one main reason: "So much of how we keep up with each other down here, and how much we relate to each other is done in person" (Ann, New Orleans). Mediated communication could also be a painful reminder of absence—"I don't know, I think it also spares people the pain of having to continue to acknowledge [someone's] not here" (Ann, New Orleans)—and, for those who had settled elsewhere, an equally painful reminder of no longer living in New Orleans.

Discussion and Conclusions

Although this study is of New Orleans musicians, we speculate that our observations of musicians' responses to disaster and recovery are true of other groups with a strong place-based culture and livelihood. We found that when faced with lack of information, musicians creatively adapted technologies to find information and disseminate it

to others in their community. In the immediate aftermath of the disaster, musicians used a variety of available communication technologies to discover what happened to friends, family, and their neighborhoods. Seeking and redistributing information often resulted in their creating or discovering online spaces that became virtual instantiations of the damaged and broken physical environments from which the musicians were barred. These online versions of physical communities were a source of information and emotional support. Through forging virtual interpersonal connections, respondents expressed a concern for the physical locale. Similar to other recent research in the disaster area (Hagar, 2009; Shklovski et al., 2008), our results illustrate that for this musician community, knowing the state of the physical environment of New Orleans became viscerally important. Respondents derived comfort from interactions with those who also cared for the decimated neighborhoods and who felt the same pain of loss.

Musicians adapted computer-based communication and information technologies for individual and community purposes. They used many creative work-arounds (such as phone trees using texting), and they frequently updated lists of people on Web sites formerly used for other purposes. BlackBerry owners became hubs of information, using their technologies for community purposes to reconnect family, friends, and strangers. Evacuated people used *New Orleans Times-Picayune* discussion boards and safe lists to exchange support and glean information about individuals and whole neighborhoods. As recovery continued, many musicians discontinued or adjusted their use of technologies that did not fit the cultural and social context of their everyday lives. Those who returned to New Orleans focused their energies on rebuilding work-related connections and community ties, often eschewing mediated communication for in-person interaction. Those who remained away found that digital connections to the New Orleans community were insufficient to maintain a sense of belonging.

In this study, we found stark examples of the connection between physical communities and their online instantiations. As musicians dispersed, they sought these virtual instantiations of physical communities as points of connection, sources of more reliable and locally relevant information, and sites for exchanges of support. Once the forced dispersion ended, many of the virtual points of connection started to fade. Although musicians who remained outside New Orleans maintained digital connections with friends and band members in the city, they nevertheless experienced a loss—a sense of belonging to the music community. They anxiously expressed this loss of place even as they continued to keep in touch with their community by listening to the local radio station online or by reading community Listservs.

Definitions of community attempt to capture something fairly elusive, but we can conceive of a community as a fabric of social interactions situated within a geographical place based on peripheral awareness of familiar others and their activities. These goings-on, interactions, and activities become markers of life that define familiarity with the community's social and physical space and contribute to a sense of belonging. Without easily available digital ties, relocation from a community used to mean a

complete loss of such awareness. Now individuals who are away can keep in touch with their community through mediated communication with select community members and by accessing local news and discussion resources remotely. Yet the community as a whole does not have that connection with the absent individuals, barred from the ambient awareness of their daily lives. We theorize that through time and despite personal connection with individual community members, the physically absent person can fade from ambient community awareness. Whether new technological connections can slow this process, giving members more time to return, remains an open question.

Limitations

The major limitation of this case study is the specific nature of the physical place and the occupational population that we chose to sample. Although many of our findings recall other disaster case studies, the attachment to place that we observed in New Orleans may be harder to generalize to other locations. The importance of physical place may be accentuated because our sample consisted of musicians and music professionals who regarded New Orleans as a unique place based on the historic, regional music produced there. The very strength of attachment that we found in New Orleans no doubt contributed to the strength of the effects we observed.

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