Program Proposal

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**Supporting citizen-based community resilience during reconnaissance and recovery**

1. Statement of Purpose

Disaster, by scholars’ definition, occurs when an event bounded within time and space comes about due to either natural or man-made agents, resulting in losses and disruption to the social infrastructure and built environment of a society (Tierney, 2006; Dynes, 1976; Fritz, 1961). Sociologists have investigated the disaster domain and identified a range of social phenomena and behaviors that emerge during these times of mass emergency. Today, an aspect of these social behaviors includes the integration and role of information and communication technologies (ICT) such as social media. These social media provide a platform upon which people engage—in some cases, from many parts of the world—demanding, sharing and producing information related to the disaster event.

Faulkner (2001) identified six stages of a disaster event: Pre-event, Prodromal, Emergency, Intermediate, Long-term (recovery) and Resolution. Project EPIC Colorado’s work to date has primarily focused on events taking place during the Emergency stage, when the crisis has hit and damage mitigation and immediate response are the main objectives. My proposed research program expands upon Project EPIC’s work and focuses on the three stages which follow the Emergency stage: Intermediate, Long-term (recovery) and Resolution stages. During these three stages, we see a state of routine and normalcy restored to the affected area. Identification of lessons learned and the potential for improved preparedness for future crisis events are also evident here, ultimately morphing into the Pre-event stage once more.

Disaster response teams have included public information officers (PIOs) for many years. These PIOs are charged with getting information to the public in times of hazard and crisis. Typically the best means of disseminating information to date has been to deal directly with traditional mainstream media outlets and reporters – they were the only ones who were able to access large numbers of people, quickly. Today, mainstream media remain a vital part of the communication strategy for PIOs, however people are seeking more detailed, individually relevant information related to emergencies, and they seek that information online through blending mainstream media sources with social media channels. Additionally, the public actively engages by producing information, not just receiving it. They produce text, image and video-formatted information and post it in social media. People appear to use these two different types of media in complementary ways – to clarify, confirm, correct and consolidate information in order to ensure they and their friends have the most up-to-date, correct and complete information available.

As a result of this change of the public’s media consumption - and production - we can say that every person using the social web has become “media”. If individuals carry a data-capable cell phone, they each have the ability to not just consume content at any time, but also to create it. This capacity has been embraced by the public. Whatever the ‘event’, mediation and sharing of that mediated content has become an ever-present part of public life.

These changes in the operation and presence of media have distinct impact on the perceived control that PIOs have over the dissemination of information which has been cleared for public release. It has been said that PIOs are able to use social media to deliver news release information directly to the public (Latonero and Shklovski 2011; Hughes and Palen in submission), however as the public are usually first on the scene of a crisis, they are also becoming first to report on that crisis, making them news breakers through social media.

Whereas before PIOs were able to identify key media representatives and build relationships with them as gatekeepers to the wide audiences they wanted to access, today PIOs are faced with the difficult task of disseminating a message and building relationships with the full audience in fragmented ways (Hughes and Palen, submitted). Through my work within Project EPIC during the Boulderfire roundtable discussion and the recent participant design workshop I have listened to some concerns of PIOs related to monitoring and producing content in social media on top of their already heavy load of communication demands. The need to do all of it, and do it well is almost impossible to comprehend within the disruption and mass communication demands of an emergency.

Successful communication of timely, correct information to the public is key at all stages of a hazard event, with the possibility that this communication can actually mitigate the event. For example, Faulkner (2001) states that the role of media in disaster management strategies could make the difference between “whether or not a difficult situation evolves into a disaster” (p. 141).

Increasing access to communication during a hazard event does not only have positive potential. Faulkner (2001) also asserts that media can hinder recovery rather than improve it through spreading misinformation. He points to the Andover, Kansas tornado disaster of 1991 in which 54 tornadoes crossed six Midwestern states, causing 24 deaths and more than 200 injuries (Morbidity and Mortality Weekly Report, 1992). When the tornado which reached Andover arrived, the town’s only warning siren failed, however a post-storm survey conducted by the local health department, the Kansas Dept. of Health and Environment, The American Red Cross and CDC identified that over 70 per cent of the township were made aware of the impending hazard through official sources, and through visual indications of the funnel’s approach. Even so, Faulkner reports that 20 percent of emergency operation center staff time was taken up with media damage control rather than conveying accurate and timely information.

Research has shown that following the immediate attention given to a disaster event by media, the number and frequency of stories drops markedly (Singer and Endreny, 1993; Wei, Zhao and Liang, 2009). For example, Gould (1998) found that then number of stories related to the 1994 Northridge earthquake had dropped by half by the third day, arguably limiting the amount of information people still needed in the area, From my experience, the nature of the mainstream media news business model which requires news to be immediate and pressing means that professional journalists are generally not interested in covering stories related to recovery and reconnaissance unless they report for a specialized niche or local area media which has an audience directly concerned with the ongoing story. Most often in any case, the treatment given to the story relies on short, punchy information related to devastation and destruction rather than an extensive exploration of details of recovery. This focus of mainstream media flies in the face of the recommendations of the National Research Council Committee on Disasters and the Mass Media (1980) which stated media should fulfill six specific functions: warning; provide accurate information to the public and officials; chart the progress of relief efforts; cover lessons learned; communicate about long-term education; and analyze long term issues that result from disasters.

I suspect the effect this crisis-focused media coverage has may have impact on communities beyond the effect of the disaster event itself, and the limit of information being provided through mainstream media to a wider audience may prevent lessons from being learned from a disaster event that could assist other communities at risk, in their own awareness and preparation. These effects have been investigated in the literature related to tourism and disaster, for example, where the economic effect of the disaster is felt long after the event in tourist destinations even after rebuilding, purely due to the lack of awareness and the public’s association of a location with the disaster event (Murphy and Bayley 1989; Cioccio and Michael 2007; Faulkner 2001).

Furthermore, I believe the lack of media coverage through the stages of recovery contributes to a missed opportunity to gain understanding of an issue in the wider community, as are the opportunities to educate about risk reduction for future events, and the establishment of confident preparedness measures. For example, the codes for rebuilding might be adjusted following a hazard event, but these codes might be considered too niche for a general media audience, and a story related to the adjusted codes may only appear in trade publications, or in local news, limiting its exposure. The effect of this is a limited understanding of the new building codes, as well as a limited understanding of their importance and why they were adjusted. Perhaps if mainstream media are unable to fulfill all the recommendations of the National Research Council related to reporting on recovery following a disaster, there may be an opportunity for that communication to be enabled through social media. This could provide an opportunity for gaps in understanding (such as reasons why adjustments to building codes are made) to be filled.

The short attention span of mainstream media may also limit its ability to perform its function well. Traditional journalism is founded on not only reporting facts, but also on the investigation, inquiry and analysis of those facts. As media appear to move from one tragedy to the next without attending to the intermediate and recovery stages of disaster, the investigation of facts becomes less possible, even if no less newsworthy. These challenges and their possible implications would be interesting to investigate.

One challenge to the full reporting of all stages of disaster is the persistence of what researchers have referred to as ‘disaster myths’ (for example, Fischer, 1998; Tierney, Bevc and Kuligowski, 2006). Researchers have considered myths and their relationship to how people – both the public and authorities - prepare for and respond to a hazard event. These disaster myths then may influence both professional and community understanding of disasters, and even become influential in formalized response behaviors.

Myths appear to have a strong relationship to metaphors and rumor. It would be interesting to research the impact of mainstream media’s use of metaphor in the reporting of disaster, and how it impacts social understanding of disaster and reinforcement of disaster myths. For example, during Hurricane Katrina, various mainstream media reports (for example, NBC’s ‘Today’ show, August 29 and NPR’s “Talk of the Nation”, August 29) inaccurately reported that the levees had not been breached and that New Orleans “dodged a bullet.” This theme in media reports persevered even when it had become clear that the effect of Katrina was more severe, and on August 30 the Washington Post reported that “the city managed to avoid the worst of the worst. The Mississippi River did not breach New Orleans’s famed levees to any serious degree.” (Whoriskey and Gugliotta, 2005) It is one thing to say this reporting was incorrect, and yet another to look at the direct effect the frequency and apparent authority these reports have. In fact, the reports were used by President Bush’s administration as a defense of their “slow response to Katrina.” (Stempel, 2010); and the Dept of Homeland Security issued a report on September 1 stating FEMA’s Urban Search and Rescue Team would cease operation until the National Guard could assist with security, due to the reports of shootings and rioting in the streets. (Homeland Security and Governmental Affairs Committee Report, 2006 p. 325)

Television news stories are typically less than two minutes each, and must focus on a newsworthy angle. It is generally understood that bad news is the best material to report, especially if emotion-charged images of destruction and suffering people are available, to provide the biggest impact for viewers in the shortest possible time. While professional media ethics call for balance, objectivity and even respect for privacy, there is no body in the USA which enforces these ethics and mainstream media will often use “public interest” as the reason why they continue to show images which many might find unethical in their invasion of (perhaps even celebration of) private pain.

The news angles sought by the mainstream media might also be problematic in reinforcing and highlighting issues which may not exist. For example, the US television show, The Doctors, sent a team to Haiti two weeks following the 2010 earthquake to both assist with medical need and film a special episode of its television show (The Doctors, 2010). The episode included a segment focused on a security briefing upon their arrival in Haiti for the doctors who star in the show, which one of the doctors, @DrJimSears, also tweeted about. This segment, filmed effectively with somber faces of the Doctors in a darkened room, could be less reflective of the real situation on the ground in Haiti at the time than a way of establishing hero status for the stars. Arguably, the effect of such reinforcement of the myth of the need for security through mainstream media could be to limit official response, and create a public perception that Haiti and other disaster areas will be insecure and dangerous.

*1.1 Digital Volunteers*

A growing body of literature has begun to identify an emerging willingness of people to volunteer in the social media sphere, to assist in the coordination and dissemination of information related to crisis events (for example, Qu,Y, Wu, P and Wang, X, 2008; Shklovski, I, Palen, L and Sutton, J, 2008; Heverin, T and Zack, L, 2010; Vieweg, S, Palen, L, Liu, S, Hughes, A and Sutton, J, 2008). Starbird and Palen (2011) refer to the members of the public around the world who collaborate online to assist in this work as digital volunteers. These digitally-based, geographically dispersed members of the public use social media to assist in such things as communicating and connecting needs with offers of resources, disseminating situational awareness information and helping to map consolidated geographic information for the use of others.

My research will explore the potential for these digital volunteers to work and collaborate beyond the emergency period into the Intermediate and Recovery phases of disaster, thus complementing the communication work performed by traditional media outlets, and more fully reflecting the six recommendations made to mass media of the National Research Council Committee in 1979.

My colleagues and I are looking to provide digital volunteers with a platform which can present information of specific interest (such as displaced pets) to a community affected by a disaster event. I would like to see what behaviors digital volunteers exhibit in presenting, qualifying and updating their information, as well as who accesses it. This investigation will give a better understanding of the role of the public and mainstream media as potential partners in communication during the recovery period after disaster, and uncover areas where collaboration may be possible. For example, in their study of the social media interactions which occurred in the immediate aftermath of the April 16, 2007 Virginia Tech shooting, Vieweg et al (2008) discovered that instead of inaccurate information or rumor-mongering, socially-produced accurate information was collected and presented to readers of various Facebook pages prior to official announcements of casualties being made by the university. It is important that this paper recognizes that faster information dissemination did not appear to be the goal of the people who posted to the pages, but that those studied acted independently to obtain and verify information, and did so collaboratively and transparently, asking others when they were not sure of details.

The proliferation of social media and increase in global connectedness means it is possible that emergency managers, media and members of the community could better assist those affected by disasters and better prepare everyone for similar events around the world, thus minimizing the effect of hazard events and improving recovery efforts. Research has shown that Emergency response and recovery phases are not linear and overlap exists between phases. In practice, recovery often takes place in an ad hoc fashion because key decisions are not part of a strategic program to restore services and rebuild communities (Durham et al. 1993, pp. 30). The ongoing problems with recovery after disaster appear to correlate with problems with preparedness for future events. I would like to identify correlations between communication and awareness of the recovery stages of disaster in the geographic and global communities in an ongoing research plan which could aid in identifying messages that work best in assisting communities at risk of hazards in their preparation.

The purpose of the overall research endeavor will be to see if it is possible to leverage the willingness of the general public to be involved in social media communication during disaster events to create opportunities within the recovery phase that will meet the needs of the affected geographic community in ways which have not been experienced before.

*1.2 Preparation and media*

Integral to achieving the goals of preparedness are educating the community in hazard awareness. Though many disaster events occur following an official warning, the public may not adequately prepare themselves unless they know how to do so. Additionally, building codes and other infrastructure regulations, as well as education about managing mass emergencies from a personal, business and government perspective may be adjusted as part of the lessons learned in the recovery phase of a disaster. These adjustments aim to reduce communities’ vulnerability, improve resilience and better position all members of the community to assist in mitigating the possible damage from future events.

However, these aims of reduced vulnerability through education are only achieved if:

1. The community at large is made aware of the relevance, need and result of implementing them (not just those who are decision makers, or those who were directly affected by the previous disaster event); and

2. The community at large acts upon that awareness, evidenced by changes in attitude and behaviors. These changes are shown through preparation of emergency kits, registration of domestic animals, adjustments of insurance, etc.

Patterson, Weil and Patel (2010) have reflected upon the unpreparedness of the public for an impending disaster, even when they have experienced one previously (p.128). These authors identify that citizens make better decisions about being prepared for hazards when they are equipped with better information – probably from a wider range of trusted sources. This information affects the public’s perception of likely risk.

While we might assume official entities and advisories are the most trusted sources of information for the public, Patterson et al also refers to ‘cry wolf’ syndrome. This syndrome refers to the public’s lack of belief of the seriousness of warnings from official advisory bodies when previous warnings do not become realized. For example, following Hurricane Irene, many citizens expressed concern that warnings were no more than “media hype” rather than media conveying warnings directly from official sources (Burnside 2011). The “cry wolf” syndrome therefore affects the public’s perception of both mainstream media and the official source.

Traditionally mainstream media have been the best way of getting messages related to disaster preparedness and recovery to the public quickly, and media continue to provide an important portal of information dissemination. However, it is important to remember that the goal of PIOs is to educate and communicate with the public, not just the mainstream media outlets who would then be relied upon to report information on their behalf. Today, mainstream media do not reach as many people as it once did. Fragmentation of media attention, particularly in younger age groups due to the public’s use of the internet and time-delay media devices such as TiVo mean it is necessary for PIOs to attend to a wider variety of media channels and producers to create an effective message dissemination across the population.

Additionally, at the same time that mass media coverage moves on to other events, people affected by disaster are trying to re-establish their relationships and routines, and might feel that they have been forgotten, simply because media coverage of the emergency period is over. There is an opportunity for social media to provide the continued coverage, connection and information flow when mainstream media have moved on. The importance of routine aspects of everyday life can not be overestimated. They indicate elements of control and reliability for both individuals and society which are indicators of progression towards recovery after disaster or other events affecting social order (Mark and Semaan, 2009).

Today the actions of online communities have become a new aspect of disaster response and coordination efforts and researchers have begun to suggest possible applications which aim to support the needs of handling these in a quicker, more coordinated way (Merchant, Elmer and Lurie, 2011). The real time effort of people located all over the world who take to social media and connect with each other to inform others during times of mass emergency, both on the ground and elsewhere, has been recognized by both Google and Facebook, both of which have initiated their own development areas committed to the support of these endeavors. Google’s Crisis Response Project (www.google.org/crisisresponse) is an ongoing initiative focused on making critical information more accessible around disaster and crisis. Part of this Project is the Google person finder tool was used to record information on hundreds of thousands of displaced people across the Haiti earthquake, Christchurch earthquake and Japan tsunami. Facebook has incorporated the communication needs of the public through its Global Disaster Relief initiative (www.facebook.com/DisasterRelief), consisting of Facebook pages related to disaster relief images, stories and video as well as timely live presentations through its Facebook Live streaming channel (http://apps.facebook.com/facebooklive/). These multiple sources of social media connection are demonstration of the potential social media have to complement and clarify the messages communicated through traditional mainstream media channels may aid in the awareness, preparation and resilience of communities in hazard events.

Sociology of disaster scholars have long noted that transitions of response, early recovery and longer term recovery are generally not well-managed (Tierney, 2004). It appears that to improve these transitions, it is necessary to establish better communication, collaboration and opportunities for volunteers to help and add to the already established processes for recovery, using whatever means available to provide the infrastructure. It is important to consider a number of areas which assist recovery and build resilience.

*1.3 Animals in disaster events*

An important part of recovering from disaster is the continuation and re-establishment of family relationships and routines. Achieving normal routines for over 60 per cent of American households includes a life with domestic animals. During a hazard event, many people will refuse to evacuate without their pet, or alternatively, risk their lives to retrieve a pet. Lowe, Rhodes, Zwiebach and Chan estimated that during Hurricane Katrina 200,000 pets were displaced, with only 5 percent being reunited with their owners (2009). Additionally, this research indicates when pets are lost during a disaster event, the psychological distress to the owner exacerbates the effect of the emergency, and prolongs the recovery period.

Understanding the importance domestic pets play in the lives of people is one way to better understand what kinds of things will impact their willingness to cooperate in emergency preparedness and evacuation, as well as their ability to transition to a recovery phase following a disaster event. The Federal Emergency Management Agency (FEMA)’s guidelines have now recognized this importance, and have included new regulations related to domestic animals in evacuation and shelters in disasters. However the persistence of ‘dangerous dog pack’ disaster mythology, where both citizens and officials believe that stray dogs will band together and attack people (Irvine 2004), creates a barrier to caring for displaced animals in a disaster.

The Pets Evacuation and Transportation Standards (PETS) Act (2006) which was passed following Hurricane Katrina supports states of the USA with funding when they include programs attending to the evacuation of pet owners in their preparation for hazard events. While this Act has now been in place for five years, no research has yet been performed on how to communicate to the general public about preparing their pets for hazards. In fact, it would appear that while pets are often considered members of a family, people forget to prepare adequately for them even when they are making family emergency plans. In disaster situations, this lack of preparation is reflected in the types of public health issues mentioned above where people may refuse to evacuate or return early to an evacuated area due to pets being left behind.

Disasters do not only cause immediate human suffering and destruction; they also impact longer term community cohesion through the displacement and destruction of geographic environments, leading to displacement of people and animals, confusion over resource needs and availability, and a mainstream media which stamps a community as a disaster zone, and then walks away. Luckily, the existence of both on- and offline connections within and out of the affected geographic area allows the global community to be more aware of what is happening than it once was able to be.

*1.3 The global community*

As part of my work with Project EPIC, I have co-authored a paper to be published in CSCW 2012 which considered the social media behaviors of medical personnel on the ground during the Haiti earthquake in 2010. The paper involved an analysis of over 16,000 tweets and their associated links to other social media presences on the web, taken from the three-week emergency period. In this Haiti medical tweets sample, we saw numerous instances where medical personnel located on the ground were able to communicate with individuals in other countries (which I will refer to as remote) to obtain information about transportation, medical supplies and hospital locations, however to date, there has been little recognition of social media’s role in enabling these types of connections. The behavior exhibited by the medical personnel and agencies in Haiti was more reflective of what we have called ‘beaconing’, where messages of need and status reports are communicated through social media to an audience which was unidentified. During the Haiti earthquake and immediate emergency period, the remote community was engaged with identifying relevant information, and connecting with others online who could then pass on the information to those who needed it on the ground. In some but certainly not all cases, the people based online were dispersed geographically, and their network of connections were able to provide immediate information to those individuals who needed specific information and assistance.

However, I am hesitant to confidently identify the behaviors of these digital volunteers in disaster events as normalized, or even as a firmly bound set of emerging practices. As social media tools such as those currently being purpose-built by Google mentioned above, as well as the appropriation of more general social media infrastructures such as Twitter for disaster event communication continues; and as the users of these media continue to grow and develop in their adoption and adaptation of the tools, so the ways we might see digital volunteerism evolve are difficult to predict. Depending upon the social media tools available, the communication needs of the event and the people willing to be involved in some way as digital volunteers, new possibilities to assist could be presented. For example, as more of the public become aware of the possibility of social media being used in this way, I predict the number of people who may become interested in performing some kind of digital volunteer work is likely to rise.

One ongoing issue in this new online media platform is the identification of credible users, not just credible information. Numerous researchers and businesses are considering the area of trust, reputation and influence in social media (for example, Gilbert and Karahalios 2009; Bickmore and Cassell 2001), but they are yet to identify a reliable way of ascertaining who is more trustworthy using computational means.

Meanwhile, it could be necessary to identify credible digital volunteers in order to support their acceptance by officials, media and the public. For this reason, it is important to consider establishing training for the global community of willing volunteers, as part of the preparedness aspect of disaster management. This credentialing would have a threefold effect.

First, it provides credibility of both the volunteer and the information that person is sharing. This establishes a level of security and reliability for all community members, both on and offline, as well as for emergency responders, officials, mass media and the wider general community.

Second, it would provide volunteers with a recognized status both on and offline, as well as an identified community membership. This validation for their efforts aims to encourage them to continue performing their voluntary work beyond the emergency phase, and into the short-term recovery period – long after mass media attention has moved to the next event.

Finally, it would allow a social and technical infrastructure to be created within which these trained volunteers will be able to work on producing information in realtime instead of developing environments each time a disaster occurs, which takes time and organization. Creating a technologically supported infrastructure for the public to assist others around the globe in disaster events draws upon the best of people, as well as those of social web technologies. The rise of the digital volunteer demonstrates that people are willing to assist in times of disaster through social media, and that the work they are able to do is not limited by location.

2. Crowd-sourcing and Public Empowerment following Disaster

Due to the lack of internet connectivity in many parts of the world external, trained volunteers are sometimes better able to collect and organization central repositories of information than those on the ground whose attention is likely to be otherwise needed. Additionally, disaster-affected areas are likely to be primarily focused on the needs of people on the ground, rather than connecting with others in the global network. While it is important for the network of digital volunteers to have links to those directly in the geographically affected area, it is not necessary for them to be geographically located on the ground themselves.

Directly following the Emergency phase, and into the Recovery phase, digital volunteers would take information from many different sources and enter it into the appropriate online repository that anyone in the world could access in the weeks and even months following a disaster event.

*2.1 Types of Post-Emergency Digital Volunteers*

I envisage there are three different categories of work to be performed by these digital volunteers.

1. Data Scouts: On the ground: An individual equipped with tools of media such as a camera or data-capable phone, who collects information as a primary source. This Scout will act independently as well as in response to expressed needs from other Data Scouts. (Eg: ‘Could you please get a picture of 112 Wellington Street?’)
2. Consolidators: Location anywhere: An individual who filters, collates, consolidates and modifies information through any form of media as well as that supplied by the primary Data Scout collectors in order for it to be read by the repository.
3. Checkers: Location anywhere: An individual who filters the work performed by the Consolidators to ensure information is current and accurate. For example, if a primary collector posts a picture of a lost animal with a location, then the Consolidator adds it to the repository, the Checker would then identify if the animal were still lost, referencing other information being collected.

*2.2 Who is likely to want to be a post-emergency digital volunteer?*

A digital volunteer could be interested in a particular geographic area, disaster type or perhaps a particular industry or interest/issue such as insurance or pets. S/he would monitor information from relevant sources, and contribute to the repositories of information related to that area.

Online networks allow geographically distant people to come together around a disaster event. The online community allows professional emergency responders the opportunity to leverage the support of the broader global community in realizing their goals to save lives and assist in the transitions between early response through reconnaissance and recovery.

Literature on reconnaissance and recovery reveals multiple recommendations for improvements in the recovery and rebuilding following a disaster event, and highlight the recurring issue that even when people have experienced a disaster event, they remain unprepared for future events (Tierney, Lindell & Perry, 2001). Too often, these lessons learned do not include steps in addressing the social infrastructure which would support the successful implementation of recommendations. For example, following the Kocaeli, Turkey and Chi-Chi Taiwan Earthquakes on August 17 and September 21, 1999, a list of lessons learned included the statement that developing building codes is useless unless they are followed (Anderson, 2000). Codes are not followed unless the authorities and builders alike understand the necessity of their implementation. Through education and understanding cultural practices and ideals, better implementation of building codes could be made possible, and a great improvement in planning transitions between phases of the disaster would occur. As mass media and NGOs move out of a disaster area and the people are left to re-establish control of their lives, these practices would build a culture of prevention as well as a positive focus for the future.

A key aspect of established communities is their inclusion of standard cultural norms which enable members of the community to feel like they belong, and which allow them to express their belongingness. These cultural norms are represented through artifacts embedded within the community, offering opportunities of shared identification to community members. (Orr, 1990). Offline these artifacts may be such things as clothing, handshakes and behaviors. Online artifacts may be less focused on physical practices, and rely more on language and shared imagery. The understandings we have of culture, and how it relates to community has been limited by assumptions of location and the influences that geography plays in determining social structure. Interesting work focused on how these assumptions relate to online culture, social structures and communities is yet to be done, and may be explored in depth through the lens of disaster research. The study of communities during disaster allows us to observe them when under great strain. While disasters are an unfortunate reality, they “both reveal elemental social processes of the social order and are explained by them” (Kreps 1984, p.327)

As communities have become globally connected, their ability to support people in crisis is no longer determined by physical proximity. Understanding the nature of connectedness of communities will enable emergency responders of all kinds – professional and volunteer, officially credentialed and general citizens - to provide more focused support during times of disaster.

3. Research

I plan to consider communities online and offline with a focus on communications related to crisis or disaster recovery. By understanding how people connect within their local and online communities after mainstream media have stopped reporting on the disaster event, we can better inform people about disaster risk preparation in both the affected geographic area as well as globally. This education would then additionally assist in making recovery and reconnaissance more efficient after future events. There are multiple aspects to this work, identified by the following collection of potential research questions.

1. How does mass media coverage of crisis events differ from or complement the coverage encountered in social media (topics, objectivity, etc)? Does the social media engagement with an event match the same time frame the mass media are covering it? Is it possible to identify what effect the coverage has on the community, both online and offline? Through looking at social media – a domain in which both citizens and mainstream media have presence – it is possible to identify trending behaviors and topics pursued in the aftermath of disaster. When we know the kinds of information being disseminated and demanded by different parties following disaster, we are better able to equip PIOs with information most sought in the spaces, languages and even timeframe people seek it.
2. What level of reporting of recovery and reconnaissance efforts is being performed by all types of media compared to that sought by organizations such as FEMA? What impact does the reporting (or non-reporting) of these post-emergency period efforts have? If there are deficiencies in the communication of post-emergency messages, how could social media and digital volunteers assist with filling the need?
3. Digital volunteers such as those who have become familiar with the Tweak the Tweet syntax and Humanity Road are focused on organizing quickly during a disaster event. A possible plan of action would include identifying the types of digital volunteers who would like to be involved in these post-disaster tasks which are focused on assisting a community to rebuild rather than tracking the disaster as it happens. There has not been any detailed work done yet by Project EPIC to identify the types of people who are most likely to be a digital volunteer, although we have some ideas on who they might be. As we already have access to a number of digital volunteers who have been active through numerous disaster events, it provides an opportunity to speak in depth with the digital volunteers we know, and use that information to identify those who may move on to this new range of tasks, or to seek people who would fit.
4. If it were to be implemented, what kind of training is needed for online volunteers working as digital volunteers? How should it be delivered, who should authorize it, and what content should it include?

I would like to engage a triangulated methodology, based firstly in ethnographic methods with further exploration using data analysis, and then finally depth interviews to further explore key components of what is indicated in the earlier data. The methods of investigation will be exploratory.

Identifying how people behave online as well as offline during times of crisis and disaster, how they connect with others and how those relationships extend past the emergency period will provide the authorities and citizens with a better way of understanding how best to communicate with the public, and move the focus from mainstream media being the only channel to reach large audiences with one-way communication to one where the wider community can be empowered and active in its response to risk situations.

3. My Background

My experience and education across different fields offer a basis for beginning investigation into these areas of education, media and technology.

*3.1 Education*

As a teacher at Granville Technical and Further Education Institute (TAFE) NSW in Australia, I developed curriculum and delivered courses to students with myriad backgrounds. The Australian National Framework recognizes standards of achievement which must be met in order for a student to gain a qualification. However, that student may demonstrate that achievement in any relevant way (for example, in teaching a student to write a business letter, that achievement will have key performance indicators which are consistent, but the context may be different). In my five years of teaching at TAFE I taught students who ranged from 14 to 70 years of age; from privileged backgrounds to new immigrants and refugees; from new high school graduates to prison inmates. My experiences in teaching and learning in different environments as both student and teacher have allowed me to consider each of these insights in different domains, providing a firm basis for this exploration.

An ongoing body of work has been established in the education field on how remote and distance learning compares with the traditional classroom experience (for example, O’Malley and McCraw 1999; Webster and Hackley, 1997; Beth-Marom et al, 2003) and part of this work looks at the challenge of creating a similar atmosphere offline as that which is arguably achieved offline. Unfortunately, as the nature of the offline classroom’s sense of community is idealized, it is difficult for distance learners to find the same quality of education as that which teachers believe they are establishing in the offline classroom.

Rivera and Rice (2002) compared student reflections on the same course delivered three ways simultaneously – online, distance learning and a traditional in-classroom delivery. In their study, Rivera and Rice look at the value attached to distance or online learning courses as opposed to face-to-face courses, as well as comparisons of the success of students. Consistently, findings in these studies identify little difference between outcomes for students, however they acknowledge an overall ‘black sheep’ quality attached to those who study online or by distance.

Debate about the quality of learning and education within the classroom also argues that while society, students and our environments have changed markedly in the last 100 years, the way in which we assume a ‘gold standard’ education should be delivered has not. We still assume the best environment in which to teach is focused in a classroom, with a single teacher, delivering lectures and examinations to students who may have different learning styles, but who are all expected to blend into one classroom community, no matter how diverse their background, learning speed and ability, or experience.

Additionally, face-to-face and online are different environments, requiring learners involve themselves in each differently. I have been educated in both classroom and distance education settings, and have experienced both settings as a student after becoming a classroom educator myself. This experience has allowed me to appreciate first-hand the benefits of each environment for different types of students.

For example, a class I took in Maymester of 2009 through the SJMC titled Twitter and Democracy included six students, of whom only four were regularly engaged in verbal contributions. The class instructor undertook an experiment and had the class all attend via Twitter one day. The experiment demonstrated to me a lot of different aspects and opportunities which would not be available in a traditional setting. The two students who were not engaged in discussions in the physical classroom became animated contributors online. Members of the broader Twitter social media platform who were interested in the content we were discussing also contributed, and adopted the hashtag we were using. More than one thread of conversation was able to be continued, due to the nature of Twitter’s text-based environment, and two students supported the discussion by incorporating links from around the web that were easily accessed by all. Following the online day, members of the class continued online relationships and followings in both Twitter and other social media platforms, and all members of the class were able to talk about additional interests we discovered we shared through these online connections. In fact, I remain connected to the non-faculty instructor, and two other students from that class.

One method is not better than another. One way might be better for one student, or subject, or cohort than another. It might be as simple as personal preference or the season of the year, or as complex as overcoming a physical disability or location limitation.

Experience has also demonstrated that many adults have varying degrees of ‘baggage’ they associate with education, and an attempt to develop courses which offer certification of the public in hazard and risk management needs to recognize this. To say that certification is necessary is the first step – the far more challenging aspect is developing the certification itself,. What language is used in the training? Who are the learners going to be (age, background, location)? Is it endorsed and assessed? How is it delivered (online, face to face), and by whom? Many people may prefer not to undergo official training to become a data scout, yet may have particular skills and a willingness to be involved. There could be an opportunity to incorporate aspects of Recognized Prior Learning (RPL) to any training, which could invite those who are otherwise reluctant to ‘begin again’ with education doing something they already have skills in to move more quickly through the required certification.

While many reasons are found to contribute to both these issues, developing camaraderie and a cultural foundation within these educational community groups may be key to better understanding why the data shows differences between online and offline learning. A good beginning is in understanding how to develop better relationships in both these spaces.

*3.2 Media*

As an employee of Australia’s largest magazine publishing company and founding editor of one of its titles at the age of 23, I worked with influential publishers and journalists, including those creating the most popular magazine in Australia, The Australian Women’s Weekly, which at the time was purchased by one in every four households in the country. The insights I gained through this experience have connected me to the practicing business of mainstream media, and its operators. I have seen first-hand both positive and negative aspects of the business of media, and continue to question the possibility that the ethical tenets of journalism are able to be met in a profit-seeking model of media.

Mainstream media’s traditional role of informing the general public has faced enormous challenges over the last decade. The rise in mainstream adoption of technologically-based media has seen a decrease in the authority of traditional media “gatekeepers” and a broadening of the access to information production and dissemination by the general public. While early challenges to news media began with Ted Turner’s establishment of the 24-hour news television station, effectively destroying the concept of the 24-hour news cycle, the immediacy and easy access to the information afforded through social media provides what seems to be an insurmountable challenge for professional news organizations. Added to this challenge is the rise in credibility afforded to citizen journalists over the same time period. Bloggers were granted press credentials during the Democratic convention in Denver in 2008, and stories that would have been investigative pieces produced by professional journalists over a number of weeks if not months are now being broken by bloggers who have more time to commit to the investigation.

While media are charged with serving the informational needs of the public, they are profit-seeking, and their business models have always relied upon sales of advertising and high amounts of readership in order to survive. While professional ethical journalism demands accurate, balanced and objective reporting, these values are often perceived to be in conflict with the business model, and many scholars and citizens have identified doubt over the influence the business model has over what a news agency might deem newsworthy (i.e. it will attract readers and/or advertisers), and whether that is actually in line with serving the general public.

Today, professional journalists are operating with minimal resources, the most important of which may well be time. Combined with an influx of bloggers who have the same distribution available to them via the internet and are attracting large readerships in the online format, competition for readers has increased while advertising revenue has decreased due to the larger amount of available space for advertisers to buy.

The models of media institutions relying on advertisers and readership are dying. In the last decade very little has been achieved to maintain a future of professional news organizations. Making the situation for mass media worse, as profits decline, debate has risen over the quality of professional news reporting. Critics identify flaws in professional journalism and media institutions, and incidents such as the current phone hacking scandal throughout the News Limited empire does nothing to improve the situation. Ultimately it is apparent that traditional outlets are no longer the only media successful in getting messages to the general public – and messages that are disseminated may not be reported in a manner which is accurate or respectful.

*3.2.1 Social media*

The massive uptake of social media has revolutionized how people use the internet. The web has evolved into a conversation tool, supporting relationships and connections between people around the world. This evolution has seen marketers and brands make the most of a new way of connecting with audiences, however they are not the only ones finding opportunity in this new meeting space. For the audience, it is becoming more and more common for romantic relationships to be begun online, and for communities of people to form around common topics of interest, such as parenting or activism. Furthermore, Fritz and Mathewson have identified a link between the global community and the geographic community affected by disaster, which can be aligned with these online community connections. “In a fundamental sense, the disaster-struck population consists not only of the people directly affected by the disaster but also of people who are indirectly affected by virtue of their identification with disaster victims or the stricken community.” (p.36)

More recently, crowdsourcing has added rigor to the organizing of information. The wisdom of crowds demonstrates how a large number of people, with different lenses and experiences, are able to collaborate and bring together cohesive, organized and credible amounts of information.

My Master’s thesis (White 2010) investigated 20 mom bloggers, their relationships with each other, their audiences, and their involvement with a large corporate entity, Nestle, which had brought them to a two-day all-expenses-paid function at its headquarters in Los Angeles. Through a triangulated methodology, I collected tweets over the three days of the event, and performed content analysis both of the conversations held on Twitter as well as blog posts and the comments posted on those posts. Finally, I performed a number of in-depth interviews with the most ‘vocal’ users six months after the event, in order to unpack their reactions to behaviors they exhibited as well as those of others. The findings of this work demonstrated a number of relevant indicators to how online communities are formed and operate. These findings provide a firm foundation to launch further investigations into online communities in the disaster space. It will be interesting if similar behaviors are exhibited by digital volunteers, for example, to those exhibited by mom bloggers during the Nestle event:

1. Individuals go online and create connections with similarly-minded individuals. While those people may be linked individually, people do not *join* a group. Instead, they *create* them.
2. If a disagreement exists, people are unlikely to disassociate with those who are in their personally built group of users. It appears that on the whole, people seek to maintain balance, respect and understanding of differing viewpoints within their groups rather than seeking to condition them into a group of like-minded individuals.
3. Not everyone in the study knew everyone else (online or offline), even though they were willing to talk with each other using the same hashtag. It is possible for work to be done, even when the ties are very weak. Furthermore, people did not add people to their personal network simply because they agreed on a point.
4. Online networks appear to be rich and deep, and may have direct connection to work performed offline. In this study, these actions ranged from activism through to meeting up with others to talk further. Users reported that offline involvement solidified relationships, and the grey area of ‘offline’ communication, such as personal messaging in a non-public, but technically online space, also supporting these connections.

I have personally been involved in social media for five years, beginning with an account on MySpace in 2005. I began personally blogging that same year, and then was an early adopter of Twitter in 2007. I have been interested to see the user-centered transformation of these three forms of user-produced online media, and continue to be fascinated by the comparison between them, the way they are used, and the development of their design.

My work in the Project EPIC lab has allowed me to begin to understand the domain of disaster management from different lenses – the official, government and NGO lens, the local community lens, the global lens and finally, the media lens. Each has different goals in the way they communicate disaster events, and while often complementary in some areas, they are never direct reflections of each other. It is in the spaces where only one entity has interest, such as risk reduction and preparation, that opportunities arise for the online community to step in and support an overall effort to improve the outcomes.

I have begun to understand how my own knowledge of how to be prepared for a bushfire (wildfire) in urban areas is as tightly woven into my cultural heritage as it is to any educational environment. I have also been made aware of how unfamiliar I am to hazards such as tornadoes because they are not part of my background. Finally, I have friends, relatives and acquaintances who have been personally affected by disaster events – earthquake, flood and fire – and would like to conduct research which will assist in mitigating the effects suffered by the geographic community as well as their wider effects.

My training in journalism, public relations and education combined with my experience in social media gives me an opportunity to look at these issues with a lens that is different to that of a traditional emergency/hazard specialist or psychologist or sociologist. This means the depth of understanding and findings can both complement and inform those which might be discovered by someone specializing in other areas.

My extensive experience and training in the field of journalism has provided me with both experience in reporting on technology and its use for both specialist and layman audiences as well as academic training in the qualities of news reporting. I have an appreciation of the struggle for reporters to be objective and unbiased in the face of the challenge of producing content which will gain readers and advertisers. This struggle affects the story angles that find coverage, and the length of time for which they receive coverage. My appreciation of this means I am able to see the gaps in mainstream media reporting of disaster events, as well as the potential for social media to fill those gaps.

Additionally, my public relations experience allows me to recognize and appreciate the role of public information officers, the demands of the media and the need to have information reported accurately, in a timely manner. I also understand, through being on both sides of the reporter/reportee relationship, that media’s goals do not always clearly reflect or endorse those of the authorities, particularly in disaster situations.

My education background as both educator and student in online and classroom environments provides an insight to teaching people of different backgrounds and diverse academic abilities. I am able to develop instructional materials that are aimed at creating effective learning as well as beginning collaborative opportunities where these lessons can be put to use. This skill is particularly useful as we look to develop a comprehensive set of tools to both educate and recognize community volunteers who would like to take higher level operational roles in creating support tools for community-based information collection, aggregation and sharing.

4. Experience at CU to date

Through the classes I have taken since my arrival at the University of Colorado in Fall 2008 I have been able to look at how media and mass communication treats and responds to citizen input; the impact of ethics and journalistic standards on mass communication; our understanding of community and the assumptions which are embodied within their formation; and supporting foundations in research methodology and theory.

My collaborations within Project EPIC have allowed me to expand my interest in digital ethnography. In particular, I have co-authored a paper which looked at the use of social media by medical personnel on the ground during the emergency period of the Haiti earthquake response. The identification of material for the paper taught me about details of data collection, filtering and analysis. I look forward to expanding the type of data and methodological treatments and analysis of it as we investigate other aspects of the use of technology in the domain.

Working with Project EPIC allows me the opportunity to work with lab partners demonstrating different disciplinary expertise, which gives a wider perspective to the data we are collecting and working with. Being able to work with a person who has extensive computer science training allows me to both expand my areas for questioning as well as learn alternative ways of collecting and interrogating data. It also offers a challenge to embrace methods which I would normally not use, and this is a fantastic opportunity to expand my abilities.

**Fall 2008**

JOUR 6051 – Theories of Mass Communication (3 credit hours)

This class, taken early in my graduate career at CU, introduced me to underlying theories of mass communication and how to better understand questions related to media effect and models of communication.

JOUR6661 – Media Ethics (3 credit hours)

During this class I developed a paper which outlined a model for the ethical use of twitter for news reporters, and which used a case study of the Rocky Mountain News’s treatment of a story of a child who had been killed while at a Baskin Robbins ice cream store when an out of control SUV crashed into the storefront. The paper was submitted to the AEJMC conference.

JOUR6671 – Media Myth and Ritual (3 credit hours)

This class introduced the importance of media and its relationship to subjects that are contentious such as religion. I produced a paper which looked at the mediatization and of breasts and breastfeeding, considering the influence media have on society’s view of breasts and appropriate communication behaviors related to female sexuality. This class allowed me to consider the passion of rhetoric as instrumental in online communication.

**Spring 2009**

COMM6410 – Discourse Analysis (3 credit hours)

I learned to transcribe from materials that were not interviews I had directed, and was introduced to concepts central to the study of communication and discourse. The paper I produced looked at discourse on Twitter, and how the construction of a tweet performs identity work. I submitted the paper to Rutgers University and was successful in being invited to the IMSI Masters Weekend where I discussed my work on twitter, discourse and online communities with other prospective PhD students, as well as Dr James Katz, Dr Jeffrey Boase and Dr Mark Aakhus.

JOUR6061 – Mass Communication Research (3 credit hours)

A short paper I produced in this class looked at a segment of Twitter activity related to the Australian bushfires. I noted that two thirds of the tweets were produced by people who were in no way affected by the fires. The class began my interest in twitter-reported events and crisis.

ATLS7000 – ATLAS Seminar (1 credit hour, not included in course credit hours)

While still a Masters student, I joined the PhD Seminar for this semester so that I could experience the environment of ATLAS and work with other PhD students.

**Fall 2009**

ATLS5519 – Advanced Special Topics: Technology/Equity (3 credit hours)

The qualitative methods course with Dr Sarah Hug introduced the necessity and operation of IRB. Paper: Literature review focused on attitudes related to the homeless and their use of social media.

CSCI5919 – Human Computer Interaction (3 credit hours)

The history of the field and range of topics considered in HCI. Design, user experience/interfaces and the development of technologies were all covered.

JOUR6321 – Literary Journalism (3 credit hours)

An exploration of American texts that discussed truth, narrative and reporting.

**Spring 2010**

JOUR5841 – Twitter and Democracy (3 credit hours)

This class considered Twitter and social media in news reporting and the impact of the microblog on other traditional domains of communication such as education. We also explored the nuances of etiquette when moved to an online social medium, and how those courtesies support the building of community online.

JOUR6591– Masters Thesis (6 credit hours, not included in course credit hours)

Masters Thesis: I used a triangulated methodology which included a content analysis of the twitter streams, blog posts and comments, an online questionnaire directed at those who were tweeting at the time, and a series of depth interviews with the key twitterers.

*Courses taken while an ATLAS PhD student*

**Fall 2010**

CSCI5839 – User Centered Design (3 credit hours)

Prof. Clayton Lewis led the class through different methods of implementing user testing. Final project: I was part of a team which developed the interface for a social philanthropic site.

CSCI7000 – Current Topics in Computer Science: Human Centered Computing Foundations (3 credit hours)

This class with Prof. Gerhard Fischer considered areas of collaborative learning, social technologies and crowds. Final project: I was part of a team creating social media buzz around a candidate seeking re-appointment at a fictional university. We looked at people’s reactions to the candidate, willingness to share their opinions on it in social media, and likelihood to get involved in the voting process itself if reward existed.

ATLS7000 – ATLAS Seminar (1 credit hour, not included in course credit hours)

Seminar: readings on culture with Prof. Debra Richardson, who was on sabbatical from UC Irvine.

**Spring 2011**

ATLS5519-004 – XBox Game Design (3 credit hours)

I learned to write basic code in C#, and was introduced to the importance of narrative in the design of games.

ATLS5519-006 – Communication and Technology (3 credit hours)

This class was a focused exploration of research questions and a range of underpinning theory, preparing the student for the rigor of unpacking assumptions and questioning research.

SOCY5031 – Research Design (3 credit hours)

The papers studied in this sociology class invited consideration of ethics, sampling, literature reviews etc. Final paper: Designed a research methodology looking at posts from the bereaved on the Facebook pages of people who have passed away. The goal of this was to investigate research questions around how people use social media in order to maintain connections with people post-mortem, and how the user interface of Facebook supports this connection.

ATLS7000 – ATLAS Seminar (1 credit hour, not included in course credit hours)

Seminar: A variety of work in progress from each of the PhD students in the ATLAS PhD program. I led a workshop session looking at social media, and how people respond when a user passes away. This workshop contributed to the submission by myself, Meg Ambrose and Heather Underwood to the Grace Hopper Women in Computing Conference in 2011.

**Fall 2011**

ATLS5519-004 – Quantitative Research Methods

This class investigates efficient ways to use Excel, the Palisades suite of add-ons and Monte Carlo simulations to investigate quantitative research questions.

5. Future

In the final year of my PhD work I would like to undertake an internship at Yahoo, working with social media research in an industry setting. When I complete my PhD, I am interested in educating people who are not standard university entrants, particularly focused in the Australasian region. This might be with an existing government organization, or more likely through the creation of my own Registered Training Organisation (RTO) which would deliver courses that would seek to be world leading and accredited through international bodies, both educational and professional. I am interested in training, accreditation and ongoing research in crisis communication, journalism and media of all kinds.

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