

'Facebooking' Towards Crisis Recovery and Beyond: Disruption as an Opportunity

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ABSTRACT

This paper reports on an ethnographic study of Facebook use amongst a population living through ongoing disruption. We interviewed 45 Iraqi citizens, as well as received survey responses from 218 individuals, who have been experiencing the current Gulf War since March 2003. We show how people in a society experiencing conflict use Facebook in ways that are different to uses in non-war societies. We find that Facebook supports people living in crisis environments at two levels. First, Facebook aids people directly to recover from disruption. People used Facebook to create "safe lists", to seek help and provide assistance, and to re-construct their social scaffolding. But at a deeper level, citizens also used Facebook to maintain and develop new social norms, and to re-direct their country. We discuss how disruption can serve as an opportunity by which people can re-invent their societies and how our understandings of Facebook should evolve.

Author Keywords

Facebook, war, crisis, slippage, social-networking, recovery

ACM Classification Keywords

K.4.3 [Computers and Society]: Organizational Impacts – Computer-Supported cooperative work.

INTRODUCTION

Information and Communication Technologies (ICTs) have become valuable tools for citizens during crisis events. A general finding is that with ICT use, a large number of people can coordinate efforts in providing aid for disaster victims. For example, ICTs have been found to be valuable for spreading community-relevant information [24] as well as locating information and finding victims [23]. With microblogging, people within and outside the disaster area have been found to gain situational awareness [31].

More specifically, Social Networking Sites (SNSs), such as Facebook and Orkut, hold promise as tools for supporting

people in disasters, yet have been less studied in this domain [19, 27, 30]. SNSs have become popular online destinations in recent years. What makes these sites unique is that people can make their social networks visible to others. Unlike technologies such as Instant Messenger, people can make connections that they otherwise would not have made by traversing other people's networks; a search function is also available to search for friends, family, and even strangers [5].

Researchers have studied the use of SNSs from a variety of perspectives, e.g. "social searching" [15], social capital [7] and cultural differences [14]. As SNSs continue to be widely adopted, we believe that they could be valuable tools for supporting people during crises. They are malleable which enables them to adapt to a number of uses during disruption. People can form groups and can self-organize. Status update features can provide situational awareness of conditions in an area. People can find expertise through direct and second order connections. In fact SNSs might prove valuable in crisis situations far longer than the acute stages of a crisis. In this paper we focus on the SNS of Facebook. We are particularly interested in investigating the role of Facebook in supporting people not only during the acute crisis stage but also over the long-term, in enabling people to recover from ongoing disruption, and to maintain their daily lives. Our study is part of a larger research program where we are trying to better understand the role ICTs play in enabling resilience amongst populations disrupted by war [**Error! Reference source not found.**].

RECOVERING FROM ONGOING DISRUPTION

Disaster and crisis situations are non-routine events in societies that involve social disruption and physical harm [9]. Furthermore, such events can be conceptualized as the interrelationship between society (individuals, groups, communities and organizations), the physical environment (how social connections are affected), and culture (norms and values) [18].

In the aftermath of a crisis, the previous routines of daily life may no longer be viable as victims recover from the event. Researchers studying disasters have looked at this recovery process: how affected populations deal with, adapt to, and resume normal societal function following a crisis

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event. The various activities associated with the process that lead to recovery [6, 12, 18, 21] have been modeled by Powell [6] as taking place in eight socio-temporal stages: pre-disaster, warning, threat, impact, inventory, rescue, remedy, and recovery.

The first four stages of Powell’s model (pre-disaster, warning, threat, impact) include the time period from before a disaster is detected to when a disaster takes place. The pre-disaster phase is the period before a disaster strikes. The warning phase is where the potentially affected population is notified of the pending threat. During the threat phase, preventive measures are taken to mitigate potential effects. In the impact phase, the actual disaster takes place, and people begin to understand what changes may be necessary in order to lessen the effects of disruption.

The following three stages (inventory, rescue, remedy) describe the emergency related activities that people engage in that lead to the recovery phase. The first of these stages—inventory—is the period where people adjust to the crisis event and determine a course of action. It is marked by a sense of individualism where victims try to make sense of the event and take stock of their property and families [12]. One of the first activities people engage in following disaster is to try and determine the safety and location of family and friends [6]. For example, during Hurricane Katrina, “safe lists” were created where people could report their whereabouts, and using such lists it was possible for family and friends to locate one another.

The next stage, rescue, is a period where people engage in activities to aid in the relief effort. This phase can be marked by altruism, as often the public engages in pro-social behavior [6, 12]. The individuals and groups who emerge and lead the initial response effort are typically not from the formal authoritative groups that we associate with relief, such as the Red Cross, but rather citizens from the surrounding or local community who conduct search and rescue operations, distribute food and clothing, and make donations, in the aftermath of a disaster.

The stage before recovery, remedy, begins when formal organizing bodies, such as fire brigades and Red Cross personnel, provide relief. Hoffman [12] describes how, during this period, citizens begin to gather in a physical place and reconstruct their lives. People collocate and begin to re-establish their social networks: individuals forge new relationships, re-connect with others, and in some cases, relationships can deteriorate. People may also turn to close family members (i.e. parents and siblings) for support. During this phase, people often travel to the site of physical disruption to lend their loved ones a hand by helping them rebuild, or, by providing them with financial assistance.

The final stage, recovery, is characterized by a return to normalcy. Individuals have either returned to their homes or built homes in new locations, people continue to work and attend school regularly, and other societal activities resume.

In this paper we focus on recovery activities in a war environment. War environments are a special case of Powell’s model as people are experiencing several stages concurrently. For example, people may be working on recovery from a recent attack while also experiencing new threats or warnings. While most disasters are small in scale, not catastrophic in extent, and take place over a small time interval [6], people who experience war can be subjected to prolonged disruption. Such events can cause people to live with and adapt to constant uncertainty in the environment, as they must deal with random events on a day-to-day basis. People living through ongoing crisis must develop continual situational awareness when enacting their daily routines, as disruptive forces, e.g. bombings, can randomly take place at any time.

Phase	Characteristics of Disaster	Characteristics of a War Zone	Facebook use and Recovery
Inventory	Citizens verify safety and well-being of family and friends (can be difficult)	Difficult to determine well-being of family and friends due to dangerous environment	Can search for family and friends
Rescue	Citizens engage in pro-social, altruistic behavior and lead the initial response effort	May not be able to trust strangers as they may be insurgents or members of a militia	Can connect with trusted contacts; Can connect with community
Remedy	Citizens try to meet physically; Citizens reconstruct social networks; Family and friends arrive to provide support	Unsafe to travel to meet others face-to-face; Difficult to collocate/ cannot trust strangers; Distance may separate support networks	Can reconstruct social networks and reconnect with support networks
Recovery	Normal life resumes/new norms can emerge	Disruption becomes part of routine life/new norms can emerge	Some practices transfer to online interaction; Can develop/maintain new practices

Table 1: Characteristics of war and Facebook use in relation to the latter four stages of Powell’s disaster model

Table 1 contrasts how recovery activities differ during disaster and war environments vis-à-vis Powell’s last four stages in his model. Table 1 shows our hypothesized view of how Facebook can be used, first, to support the activities that people engage in prior to recovery (inventory, rescue and remedy) and, second, to support the return to normalcy (the recovery stage) and the activities in the time beyond.

We expect that due to its malleability, Facebook can support a range of activities to help citizens recover in a war environment vis-à-vis Powell’s model. During the inventory stage, citizens determine the safety and well being of family and friends. In disasters or war, people may

be separated and it can be difficult to determine the whereabouts of others. Facebook can enable people to search for others via the built-in search function. During the rescue stage, citizens often engage in pro-social behavior and provide assistance and aid. In a war environment, however, people may not be able to rely on strangers as e.g., they may be members of a militia or insurgents—violent conflict can undermine interpersonal trust (trust between people) [1]. Facebook can enable people to connect with trusted contacts, such as family, friends, and community members, in order to request or provide assistance and aid. During the remedy stage, family and friends arrive to provide assistance and people meet together physically and reconstruct their social networks. In a war environment, since there is continual disruption, it may be difficult to collocate, as well as trust other citizens. Facebook provides citizens experiencing war with a safe online environment, where they can connect with trusted contacts, as well as reconstruct their social edifice.

Additionally, Facebook could support a return to normalcy, as well as new practices that go beyond the routine. During the recovery stage in Powell's model, citizens resume their normal lives. When a war is protracted, however, disruption becomes the routine. Routine practices may be difficult to maintain due to ongoing threats and an unsafe environment. For example, people may not be able to maintain social and religious obligations. Additionally, established norms may change. In normal environments people's interactions are governed by established rules and norms—where people interact in socially acceptable ways in public [10, 15]. In a war environment, however, new social norms may emerge with respect to how people view and treat others. For example, during World War II, it became acceptable for female African American nurses to tend to white male soldiers in the infirmary; it also became acceptable for women to assume many male-dominated societal roles in work. Barley [3] describes how external events can be so intense that they cause "slippages", or changes to a social system, to take place. When slippages persist, they become replicated patterns that people must adapt to on a continual basis. As a result, people must restructure their patterns of action in order to adapt to changing circumstances. Structural changes may emerge as a result. An environment disrupted by violent conflict may act as a catalyst whereby people must revise their daily practices in accordance with what is taking place in the environment.

Returning to Facebook, we expect that people might use it to maintain practices, as working online enables them to be independent of their physical environment. When slippages occur in the environment, Facebook may even support people in developing new practices through the affordances of meeting and coordinating with others.

Studies of crisis situations have found innovative behaviors associated with the recovery process in online settings [11, 19, 20]. ICTs (e.g. blogs and online forums) have enabled people from across the globe to participate in the crisis

recovery process by providing assistance and aid, disseminating information, and providing social support [19]. These studies, however, concentrate on the acute phase of disaster—they do not examine prolonged disruption. Studies of the use of SNSs during disaster have looked at how people used Facebook to engage in distributed problem solving activities [30], to provide emotional support and guidance [19], to receive up-to-date information from peer-to-peer networks [27], and to determine the safety of friends through status message updates [19]. We are interested in how people use Facebook to engage in recovery activities in a war environment, where distance may separate family and friends, social norms may change, and trust may deteriorate.

METHODOLOGY

Our results are based on both interviews and a survey. We drew on cases from people living through ongoing disruption—Iraqis who have been living through war since March 2003. Beginning in September 2007, we have conducted interviews in both English and Arabic with 90 Iraqis who experienced the war. For this study we only analyzed our most recent set of 45 interviews (25 male, 20 female) beginning in April 2010, as these interviews focused on how our informants were using Facebook.

To recruit informants, we found individuals through various sources. First, one of the authors is an Iraqi-American who is part of a large Iraqi community in San Diego County, and we found informants for interviews through local contacts. Second, we recruited informants through several refugee groups and religious organizations (Christian and Muslim) in Southern California and abroad. Lastly, we also found informants through online sources. We only recruited informants who were no longer living in Iraq if they had recently left (less than 2 years abroad). After each interview we utilized a snowball sampling approach [4] where we asked our informants to recommend people that we could then recruit for our study. By finding informants through multiple sources our intent was to limit bias in our sample. Other CSCW studies have also utilized the snowball sampling approach, e.g. [11].

We asked people to compare their lives before and after the war. Disaster sociologists have used an interview methodology in the past and have found people's memories to be reliable long after an event [21]. It has also been found that people can correctly report typical, recurring activities they engage in over time [8]. We conducted interviews both in person (in Southern California), and across distance via mobile phone and Skype with people living in Iraq and other countries. Interviews lasted anywhere from two to six hours depending on technological conditions. At times the mobile and/or Internet networks in Iraq would become inoperable, and we had to switch to different communications technologies depending on what was available (i.e. switching from Skype to the mobile phone if the Internet went down). In some cases we would have to reschedule for a later time and date. We always

exchanged multiple points of contact with our informants prior to an interview. All interviews were transcribed; Arabic interviews were first translated and then transcribed.

Additionally, in March 2011 we initiated an online survey based on interview responses that focused solely on Facebook use in Iraq. We received 218 responses. Prior to survey deployment, we read the survey to ten Iraqis to determine if the survey language was appropriate and made sense with respect to the Iraqi culture. From this feedback we revised some phrasing in the final survey design.

We recruited survey respondents using different threads. First, we provided key contacts in San Diego (i.e. family and friends, members of church and refugee groups) with recruitment flyers containing a web-link to the survey for distribution to Iraqi refugees who had recently arrived. Second, we sent a web-link with a description of the survey to key Iraqi contacts living in Iraq and abroad via e-mail and Facebook, asking them to distribute it to their local and global Iraqi friends and family members. If we had interviewed a contact, we asked him or her not to take the survey so as to limit redundancy in responses. Third, we posted an announcement in several Iraqi Facebook groups. Lastly, we distributed the survey using Twitter.

We developed an eligibility criteria for our survey. Respondents had to be either a native to Iraq or a current resident of Iraq; if not, they must have been living outside of Iraq for less than two years. We included a question to address this, and respondents who answered that they had been living outside of Iraq for over two years were sent to a page explaining they did not qualify for the survey. In order to further validate people's locations, we used an IP-to-Country service that allowed us to determine the location of all our respondents. We found that 73% of our respondents were living in Iraq, whereas the remaining lived in the U.S., Turkey, Germany, Sweden, the UK, Jordan, and Egypt. Considering that we have key contacts living in all of these locations that distributed the survey to members of their respective local Iraqi communities, we included these responses in our analysis. After removing survey responses that were completely blank, as well as responses from people who had been living outside of Iraq for over two years, we eliminated 39 responses. Out of our remaining total of 225 respondents (interviews and surveys), 218 (97.3%) reported regularly using Facebook.

Our respondents were diverse with respect to their gender (56.4% male, 44.6% female) as well as age (Table 2). They were also ethnically and religiously diverse. While the majority of our informants were from both the Shiite and Sunni sects of Islam, we were able to recruit individuals who were members of various ethnic and religious minorities in the country, such as the Assyrians (Christians), the Yazidis (a Kurdish religious minority) and Iraqi-Armenians. Our informants were also diverse with respect to their educational backgrounds and work roles. 85% of our respondents had either completed or were

working on their Bachelor's degree. Students were studying biology, dentistry, medicine, journalism, political science, computer science, and engineering. Those who had completed college (53%) worked as doctors, journalists, professors, and in other fields. Our informants hailed from large urban cities in Iraq (Basra, Baghdad, Mosul, Arbil), as well as villages in the North of Iraq (Telkaif, Bashika).

Age Range	<18	18-21	22-25	26-30	31-40	41-50	51-60	>60
Percent	2.2	17.8	22.2	26.1	15	7.2	5.6	3.9

Table 2. Survey respondent age breakdown

We coded our documents using Atlas.ti. Guided by the research question of how Facebook was being used during the war, we utilized a grounded theory approach [26]. We first used open coding to identify general themes made explicit during interviews and free response sections in the survey, which we then reduced under axial coding.

RESEARCH SETTING

We have studied the use of Facebook in Iraq, a country that has been disrupted by war and violence since March 2003. Our informants are Iraqi civilians who lived in Iraq during the conflict. The current environment in Iraq is very unsafe for travel. Random bombings, kidnappings, roadblocks, fake checkpoints, and clashes among militias, insurgents, and the military—all contribute to making the country dangerous for travel [17]. The UN estimates that there are over 1.7 million displaced persons within Iraq [29].

Though Facebook penetration rate is officially listed as 2.69%¹, the actual usage rate may be higher; our informants reported that Iraqis frequent Internet cafes, as well as share computers and Internet connections. The majority of our informants used Facebook anywhere from one to five hours a day, and many claimed that they spent much time searching for people they had lost contact with, especially considering that more people are adopting the technology everyday.

'FACEBOOKING' DURING CRISIS

An important change that occurred in 2003 when the war began was the introduction and adoption of ICTs. The majority of our informants adopted Facebook at some point between 2006 and 2008, and they used the technology in a myriad of ways. After the initial setup and "friending", our respondents used Facebook in ways that were similar to those of U.S. college students [5]. They did social searching, identity management, coordination, and broadcasting. However, we discovered that there were also uses of Facebook that were unique to the physical world context (the war environment) and societal conditions (Iraqi traditions, social obligations and religion).

'Facebooking' towards recovery

Our data shows that the use of Facebook supported crisis recovery directly in multiple ways: by enabling people to

¹ <http://www.socialbakers.com/facebook-statistics/>

determine the safety of family and friends, by providing a mechanism where people could provide as well as obtain assistance and aid, and by affording a safe environment where people could reconstruct their social networks.

Creating Facebook “safe lists”

In the inventory phase of Powell’s model, people often determine the whereabouts of friends and family. For example, in the aftermath of Hurricane Katrina, “safe lists” were posted on various online websites such as one hosted by the local newspaper [23]. Similarly, one use of Facebook reported by our informants was the ability to establish “safe lists” by locating friends and family members with whom they had lost contact as a result of the war. When the disruption began in March 2003, the landline telephone infrastructure was severely damaged, impairing people’s ability to locate others. Many of Iraq’s citizens left the country and traveled to safe locations abroad without possessing the ability to contact other people to provide them with information regarding their personal welfare, while a large segment of the population became displaced within Iraq’s borders. Many Iraqis (mostly in Baghdad) also moved to different neighborhoods as a result of the sectarian violence that emerged in the country causing Sunni’s and Shiite’s to move to segregated neighborhoods. While a main use of Facebook in the U.S. is to connect with people—weak ties where friendship once existed face-to-face but deteriorated across distance and time [14]—85% of the Facebook users in our sample reported using it to determine the well-being of strong ties (family members and close friends) as well as weak ties. Table 3 shows that the majority used Facebook as “safelists” for locating friends and colleagues. The reason that these categories may be higher than immediate family and relatives is that mobile phones may be used for locating the latter.

Safelist use	Immediate Family	Relative	Friend	Colleague	Neighbor
% Response	33.6%	60%	86.4%	75%	41.6%

Table 3. Percent of respondents who reconnected with others

Our informants have expressed that with the adoption of Facebook, the functionality has afforded them the ability to locate people at a much faster rate compared to other technologies like the mobile phone. Our informants reported that they spend an inordinate amount of time looking through their friend’s lists perusing pictures in an effort to locate their loved ones. In this sense, when they discovered that a new strong or weak tie was on Facebook and added them to their friend’s list, they were creating “safe lists.” As described by one of our informants:

“...a lot of people left because of the security situation. On Facebook you can search for your friends and family... You will know where they are at, what they are doing. What has changed with them... So many of them that I could not find after 3 years or [more]... it was a wonderful thing”

Seeking help and providing assistance

In the rescue phase, citizens within as well as near the disaster zone often act as first responders [6]. Similarly, another use of Facebook reported by 23.2% of our informants was that they went online to seek help as well as to provide assistance during the war. Unlike other studies of ICT use during disaster, which have reported that pro-social behavior has been observed online [e.g. 28], in Iraq, citizens no longer trusted interacting with others in public settings [22]. After the conflict began, various militia and insurgent groups emerged and sectarian violence began to escalate in the country. Our informants reported they do not trust strangers in person because they may be sources of potential threats. Additionally, our informants believed the government to be incapable of providing support for a safe environment, the main necessity they reported they were lacking in their daily lives.

Our informants provided several accounts of how they and the people in their personal social networks used Facebook to seek and provide immediate help when kidnappings took place. It was important for them to be able to add people they trusted to their “Friend’s lists” and have quick access to them. Our informants have been using Facebook to organize rescue attempts consisting of trust-based ties when family and friends were kidnapped or held hostage. More recently, people have used Facebook to obtain support from the police force—a departure from the norm, as our informants reported that the police were not performing the duties that Iraq’s citizens expected of them. These reports were similar to the way in which the Tianya forum was used in China to request evacuation assistance from the government during the Sichuan Earthquake in 2008 [20].

One of our respondents, a journalist in Baghdad, described the details of a situation where he was personally kidnapped and how a combination of Facebook and his mobile phone proved to be invaluable in his eventual rescue. Like many Iraqis (especially those who worked for U.S.-based organizations), this individual carried multiple mobile phones at any given time—this particular informant carried three mobile phones from different carriers—in case of situations where they required immediate help or if they needed to switch to a different mobile network because of a lack of coverage. While traveling to work one morning, he was kidnapped and forced into the trunk of a car. His kidnapper, however, only confiscated two of his cell phones and failed to locate the third phone hidden on the inside of his jacket. Using his phone, he updated his Facebook status with a request for help designating his exact location when he was kidnapped, as well as the make and model of the automobile driven by his assailant. He sent the same message to all of his friends and family members via SMS as well in case they did not receive his Facebook update in time, and many of the people who received his message updated their Facebook statuses with a request for help. One of his family members’ friends, after seeing the request for help, informed our informant’s relative that the Iraqi

police force has a Facebook page where a telephone number was available. After sending a message to the police on Facebook and making the required calls, the police received the request for help. Luckily, the street he was kidnapped on was a long one-way road littered with checkpoints and without outlet streets. When our informant (still locked in the trunk) arrived at the next major checkpoint, the police and a few of his family members were waiting to rescue him. Thus, Facebook enabled people to not only build a trusted citizen network on which they could rely for help, but it also provided them with a way in which they could gain access to official security forces.

During the remedy phase, it is often the case that family and friends arrive in a crisis zone to support their family members and friends as they reconstruct their lives [12]. Our informants reported that Iraqis now engage in a similar behavior using Facebook where they updated their status messages requesting financial assistance from family and friends because many of the people who they relied on could no longer be accessed easily in person.

Our informants also solicited financial assistance in a way similar to how blogs and online forums were used to obtain donations during Hurricane Katrina—what is known as “connected giving” [28]. Several new Facebook groups have emerged for the purpose of connecting people with other Iraqis so that they can request financial help when they are in trouble. Most of the Facebook groups were tied to very strong communities that existed from before the war. These communities were based on places that people once shared physically (i.e. neighborhoods, villages, social clubs). For example, we found Facebook groups that brought people together who once lived in the same neighborhoods in Baghdad, groups comprised of people from villages tied to certain religious or cultural minorities, such as the Yazidis and the Assyrians. These online groups provided our informants with the ability to connect with people they could rely on during financial crises.

The ‘online Green Zone’: Re-Constructing the Social Edifice
In the remedy stage, people often reformulate their social edifice [12]. It is during this time that family and friends begin to gather together in the physical space and socialize in an effort to restore old patterns; people also establish new relationships. Various obstacles existed making it difficult for people to reconstruct their social networks during the war: a lack of trust in strangers, difficulty traveling, and distance separating family and friends. Through Facebook, our informants could establish new relationships, as well as maintain their old social patterns in an online environment.

72% percent of our informants reported using Facebook to meet new people who they felt could not harm them physically due to their geographic separation. Though meeting new people is a widespread practice with Facebook, all of our respondents claimed that despite the security situation, Facebook also allowed them to reconstruct their social edifice despite not being able to

physical collocate easily. One informant, a female who once lived in Baghdad but subsequently moved to Sweden to escape the war, referred to Facebook as the “online Green Zone.” Today, various parts of the country are designated as being green or red zones. Green zones are areas that are patrolled and protected by the U.S. armed forces, where various U.S. organizations operate, and are thus highly secure. Conversely, red zones are areas that are not safe. Our informants described how they were using the technology for several hours everyday—writing on people’s walls, sending messages, as well as commenting and “liking” people’s status updates and pictures. Thus, Facebook provided a safe place in which people could maintain their social lives without subjecting themselves to the dangerous physical environment.

‘Facebooking’ beyond recovery

Up to now, we have discussed how Facebook has been used in Powell’s stages of inventory, rescue, remedy. Moreover, we discovered that Facebook not only supported the recovery phase, but also supported new practices beyond the formerly routine ones. We found that our informants used Facebook to maintain and develop new social norms, and to self-organize in an effort to redirect society. In some cases, structural changes emerged.

Maintaining and developing new social norms

In the recovery phase of Powell’s model, people resume their normal lives. In Iraq, and other Middle Eastern countries, social duties are integrated into the fabric of Arab society where people are expected to adhere to well-defined social protocols. While it has been found that Facebook is used in countries such as South Korea to maintain social obligations in normal environments [13], in many cases technology was the only way that Iraqis could fulfill their social responsibilities.

As explained by our informants, Iraqi society revolves around the principle of “*uh-tee-rahm*”. In its most essential form, the term can be defined as *respect*. People in Iraq adhere to various social rules that have developed over time that are based on respect for others, and showing this respect in socially acceptable ways. For example, during religious holidays, such as Ramadan and Christmas (known as “Eid” in Arabic), it is customary for Iraqis to visit their relatives and friends by traveling from home to home bearing gifts for each family they visit. When people in Iraq get married, tradition dictates that family and friends who are invited to the wedding attend and bring a “cash envelope” that they put in a money box that the groom and his new bride can use to start their new life. On a day-to-day basis, “*uh-tee-rahm*” also dictates that people visit as well as host family and friends for social engagements.

Our informants reported that they shifted to technology-enabled methods to continue these traditions. Using ICTs to maintain “*uh-tee-rahm*” has become an accepted practice because, according to our informants, people understand that it is difficult to maintain face-to-face practices in the country. One of our informants described that people

possess a shared understanding of the way in which their social practices are evolving as a result:

"... everyone who lives in Iraq and who has left Iraq knows the situation here today... I live in Baghdad and I have a lot of relatives in Basra... They know I can't always come visit them... technology is the only way most of the time."

While people used an assemblage of technologies to engage in such practices, 89% of our respondents who adopted Facebook expressed how it was the most important factor in enabling them to maintain *uh-tee-rahm* when friends and family had children, for marriages, or even when people passed away. They used a variety of Facebook's features (i.e. wall posts) to maintain these practices.

In other cases, structural changes are beginning to emerge. 70% of our informants reported that they felt it was acceptable to use Facebook today even if they could travel to visit people. Thus, the war triggered a slippage where the expectations changed surrounding social obligations. In the most extreme case, people were using Facebook to evade social obligations in person by transferring them online. As explained by one informant, a 42-year-old college professor living in Northern Iraq:

"Before, I was obliged to go visit people. Let me give you an example. A friend of mine, well he's not a close friend, but he's someone I respect. This country is respect based. There's a kind of formality. And his father lately died, and I just gave my condolences via Facebook to him, which is something very bizarre...in this country, but this context called for it. [Facebook is] even replacing voice calls, which was at least recently...starting to be acceptable if you can't go physically somewhere. Phone calls would be OK if you couldn't go between two governorates. You could just do it by phone... but even this is fading..."

One important theme that arose in our interviews related to how people maintained *uh-tee-rahm* at the end of Ramadan. Ramadan is the ninth month of the Islamic calendar, where it is believed that the Quran (the Muslim religion's Holy Book) was sent down from heaven. Throughout the entire month, it is customary for people of the Islamic faith to adhere to certain rules, where they are to fast without food and water until sundown, as well as abstain from other practices. At the end of the month, Muslims celebrate for three days—the celebration is known as *Eid-ul-fitr*. During *Eid-ul-Fitr* it is customary for people to greet one another with the phrase "*Eid Mubarak*" (Happy Ramadan). Additionally, family and friends get together to observe the holiday, have dinner and share gifts. Our informants described how although they were unable to visit others and celebrate, they could greet friends and family with "*Eid Mubarak*" via Facebook. Some informants described how, by using Facebook, it was as if they were celebrating together with friends and family as if they were collocated:

"I'm used to staying up 'til 5 a.m. during Ramadan. But I am able to do that on Facebook now. Staying up all night,

posting comments, laughing with others, posting videos, remembering many events that happened when we are together. And it made me sometimes not feel that time [pass], and I could not imagine that I was sitting using Facebook for 5 hours."

While people were maintaining the traditions surrounding Ramadan online, structural change emerged with respect to this practice. We have evidence (via analyzing Facebook wall posts) that people were celebrating with their friends and family across time zones. However, *Eid-ul-fitr* is to be celebrated at the conclusion of Ramadan. This suggests that some people were celebrating with others whose 30-day devotion period had concluded in other parts of the world, while Ramadan had not yet ended for them.

Our informants also described how Iraqis are now constrained by other social norms that emerged when the war commenced, a slippage created by the conditions of the war. Whereas before the war women held a relatively equal place in society to their male counterparts, our informants described newly emerging Sharia laws. In many locations women have been forced to adopt conservative Islamic dress, such as a "hijab" (head scarf). Also, in public it is difficult for individuals to converse with members of the opposite sex without risk. Similar to the way in which chat technologies reinforced or challenged Islamic relationship rules between long distance Arab couples [2], we found many instances in which our informants used Facebook to reinforce these new societal norms. For example, our male and female informants discussed how several of the women in their Facebook networks did not have a profile picture, as they wished to adhere to societal norms. As explained by one informant, a female college student in Baghdad:

"...most of the girls in Baghdad who use Facebook they do not put on their pictures... Even if I know one of them who uses a hijab, she does not put on her pictures...there is a lot of risks... in Iraq they still have this Middle Eastern mentality, especially the men, when they want to pick a girl to marry, if she's very traditional, or at least if her parents are, and comes from a well respected family... this girl if she wants to put this picture that's bad... [also] Islam does not support images of people..."

We also found several examples where women challenged these new social norms using Facebook. As explained by an informant, a female medical student, women can now go online and socialize with whomever they want:

"When we go out it is so hard to be with boys... in Iraq there are these low level people and they want to hurt you if you are just girls going out by yourself, or if you are with boys who aren't from your family. They think this is haram [unacceptable]. When I'm online on Facebook I am safe and I can talk to whoever I want without worrying about..."

Thus, new Sharia laws led to structural changes in Iraqi society, yet some women are using Facebook as a means by which they can work around these new norms.

Self-organizing to improve Iraq

Our informants also used Facebook in ways that extended beyond restoring previous routines disrupted by the war. 33.1% of our informants described how they were using Facebook to self-organize to make improvements for the country. Our informants reported using Facebook to address several issues plaguing Iraqi society that they felt could be improved, and their efforts fell into several categories: infrastructure (i.e. education); women and minority rights; religious freedom; improving Iraq's relationship with the west; safety and security; and changing Iraq's image. We will focus on three of these efforts.

Following the war and the toppling of Saddam's regime, all of our informants described how they felt the current regime is unable to provide an adequate infrastructure for education. As a result, our informants have self-organized their own efforts via Facebook in order to generate additional resources. One informant, a male college professor, described how Iraq's educational system went from being one of the most universally recognized systems in the world to a system fighting for survival. In an effort to begin to improve education in the country, he created a Facebook group where he began to recruit other educated scholars. Together, with other Iraqis, he wished to connect with people who also felt the need to "*get Iraq back to where it was with respect to its educational superiority*". Here, he and other Iraqis have been discussing the current state of Iraq's educational system, as well as providing an online arena where Iraqis could come together from all over the world in order to obtain important resources in the form of grants, scholarships, and research opportunities.

Additionally, as previously described, new conditions have emerged concerning the role of women in Iraqi society. Our informants reported that today both males and females are using Facebook to self-organize women's rights movements. One informant, a female medical student in Baghdad, described how she felt compelled to educate people around the globe on what women living in the Iraqi war zone face on a day-to-day basis. Using Facebook, she sought to establish connections with people who could help her disseminate this information to a broader audience. After recruiting and meeting other like-minded people, one of the contacts she established happened to work for a British news agency. This individual sent our informant a camera where she then created a documentary about her life and the life of other Iraqi women, which was then posted on Facebook, and later aired on television. She received many positive responses and as a result of her efforts, she and other Iraqi women, as well as people all over the world, are trying to establish groups (i.e. Iraqis for Women's Rights) that can not only make people aware of how women are being treated in Iraq, but can also aim to provide Iraqi women with more equal rights.

Before the war, the Iraqi government's relationship with the West was tenuous at best, and Iraq's citizens were completely disconnected from people outside of their own

country. Following the fall of Saddam's regime, different regions of the country were controlled by parties which adhere to their own set of ideologies. Iraqis today have mixed feelings about the west (especially the U.S.). Whereas before the war the average citizen did not possess the ability to connect with and learn about other cultures, today the landscape has changed drastically. Many of our informants have reported that they now use Facebook to connect with and learn about Americans, to educate people in the West about Iraq's culture, and, more importantly, to self-organize movements to help bolster the relationship between the two peoples. Many of our informants, especially those who were college students, established joint online projects via Facebook in order to promote cultural awareness. For example, a group of informants engaged in an art exchange between their university and a university in the United States. One informant, a male medical student in Baghdad, described the motivation behind this respective project:

"...we wished to deepen the friendship bridge between Iraqis and Americans as a way to understand each other, so that we could co-exist peacefully in the future..."

DISCUSSION AND CONCLUSIONS

Using a grounded theory approach, we found that Facebook aided people directly in their ability to recover from ongoing disruption in accordance with the latter stages of Powell's model [6] (inventory, rescue, remedy, recovery), despite the restrictions imposed on them by the physical war environment. Using Facebook, people determined the safety of family and friends, requested aid and assistance, and rebuilt their social scaffolding. The use of Facebook for direct assistance for recovery is similar to what recent studies have shown with respect to ICT use during disasters [e.g. 11, 19, 20, 27], as Facebook allowed people to engage in large-scale organizing. People could easily connect with a large number of people, and the barrier to entry is low. However, the use of Facebook can vary on an individual basis, or from situation to situation. People can decide whether they want their activities to be public, private, or somewhere in-between. For example, when requesting financial assistance, people could solicit only their trust-based networks by posting a status update that would be visible to the people in their Friend's lists. Conversely, people could request financial assistance through Facebook groups, which are typically public. This distinction is important. When using Facebook, people can *choose* which network (public or private) they want to use. In an environment where trust has deteriorated, the ability to make this choice can prove valuable.

Additionally, we found that people used Facebook to support the recovery phase as they maintained practices, but also modified practices, which led to structural changes in their society. We also found that our informants were using Facebook for activities that extended beyond the recovery phase of Powell's model, even while violence was still ongoing in the society. In the book *A Paradise Built in Hell*,

Solnit [25] argues that people often use disaster situations to re-imagine their own societies. Crises possess disruptive power—old power structures and societal norms can be toppled—when this happens, new possibilities emerge for the citizens to redirect society.

We propose that Facebook became a medium through which citizens could “re-imagine” their society. On the surface, our informants used Facebook as a means through which they could *adapt* to the new environment. At first people were using Facebook to re-create the ways in which they would typically enact social obligations, as they were no longer able to maintain them in the traditional way, e.g. by maintaining *uh-tee-rahm* online. Over time, however, deep structural changes emerged. Our informants felt that the war context made it acceptable to use Facebook in cases where their traditions were not performed in a customary, face-to-face manner. In the most extreme cases, people used Facebook as a way out of their social obligations. Celebrating Eid-il-fur across time zones, “breaks the rules” in Islamic tradition. Thus, not only were people adapting to the situation at hand, but at a deeper level, they were also *re-inventing* how traditions should be enacted. Furthermore, women used Facebook to *re-invent* societal norms related to how they were treated in the public sphere by socializing with men, as well as putting up online pictures of themselves that cut across religious boundaries in the current environment. Within Facebook, people also created a new social infrastructure for education, women’s rights, and Iraq’s relationship with the west, in an effort to *re-direct* their society. However, it is important to consider that such practices may remain confined within the online environment of Facebook and it is not clear whether they have seeped out into the broader society.

Our findings demonstrate the malleability of ICTs like Facebook. The new Facebook-based practices were an adaptation to the war environment. By integrating Facebook into their daily repertoire, our informants were able to extend their physical capabilities despite the restrictions imposed on them in the physical world. People were able to create and experience the version of society that they wanted. Thus, Facebook served the needs of each individual, where it acted as an extension of “real life”, an alternative to what was taking place in the physical world, and as a tool to support the recovery process.

We believe that in the field of crisis informatics, it is valuable to study prolonged disruption, and the ongoing use of ICTs during the recovery phase longitudinally. For the most part, disaster studies have focused on the emergency stages—thus, study findings are limited to those very specific periods of time following a disruption. Our findings suggest that environmental disruptions of war and disaster can be an opportunity by which people can rebuild and create new structures in their society. Social media is an important actor in this rebuilding process.

When environmental slippages take place, they can become triggers for new types of actions. In our study the war created slippages where, for example, societal norms changed with respect to women’s rights. Our informants used Facebook to engage in new actions where they adapted to these new norms, as well as engaged in efforts to re-imagine their society. Other events, however, can cause slippages to take place—slippages are not unique to environments disrupted by violent conflict. For example, when new governments are elected, slippages may take place. The fall of the Tunisian government sparked a series of slippages throughout the Middle East (i.e. Egypt and Libya), where people began to engage their respective governments through protests, which was atypical in those societies. Using Facebook, people have been able to further their respective causes through the ability to mass organize.

Our findings raise interesting and important questions regarding the way in which technology is used to re-invent society. When ICT is used to maintain social obligations, how does this affect their religious practices and tradition? When examined more deeply, ICT is creating a conflict. For example, are the obligations surrounding Ramadan affected when people celebrate across time zones, enabled by ICT? In such cases, people must decide whether to adhere to certain rules (i.e. not celebrating until the correct time) or to appropriate ICT to celebrate with people across time zones irrespective of whether or not Ramadan is over. How can designers of technology take such potential conflicts into account?

Limitations and Concluding Remarks

We have several limitations to our study, most notably those which are associated with the snowball sampling technique we used to obtain informants. We do not know how representative our sample is of the Iraqi population, as our informants may have recommended people similar to them. By breaking down our sample, we find that nearly all of our informants were proactive in their adoption and use of technology. Thus, we cannot generalize our results to people who are not users of technology. Furthermore, the majority of our informants are either college graduates or college students. However, they come from different educational and professional backgrounds. They are also diverse with respect to age, gender, and ethnic identity. In an attempt to limit the issues associated with the snowball sampling method, we found informants through multiple seeds, which could help to diversify our sample.

Our goal in this research was not to generalize to the entire population of Iraq. Rather, our objective was to investigate how Facebook can be used as a tool to directly support the recovery process, as well as to support people’s ability to re-imagine and rebuild their societies through new social structures. Our goal was to expand upon recent studies focusing on the use of ICTs, e.g. Twitter, following a disaster event [e.g. 19] to show how ICTs can aid people in recovery beyond the acute stage of a crisis.

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