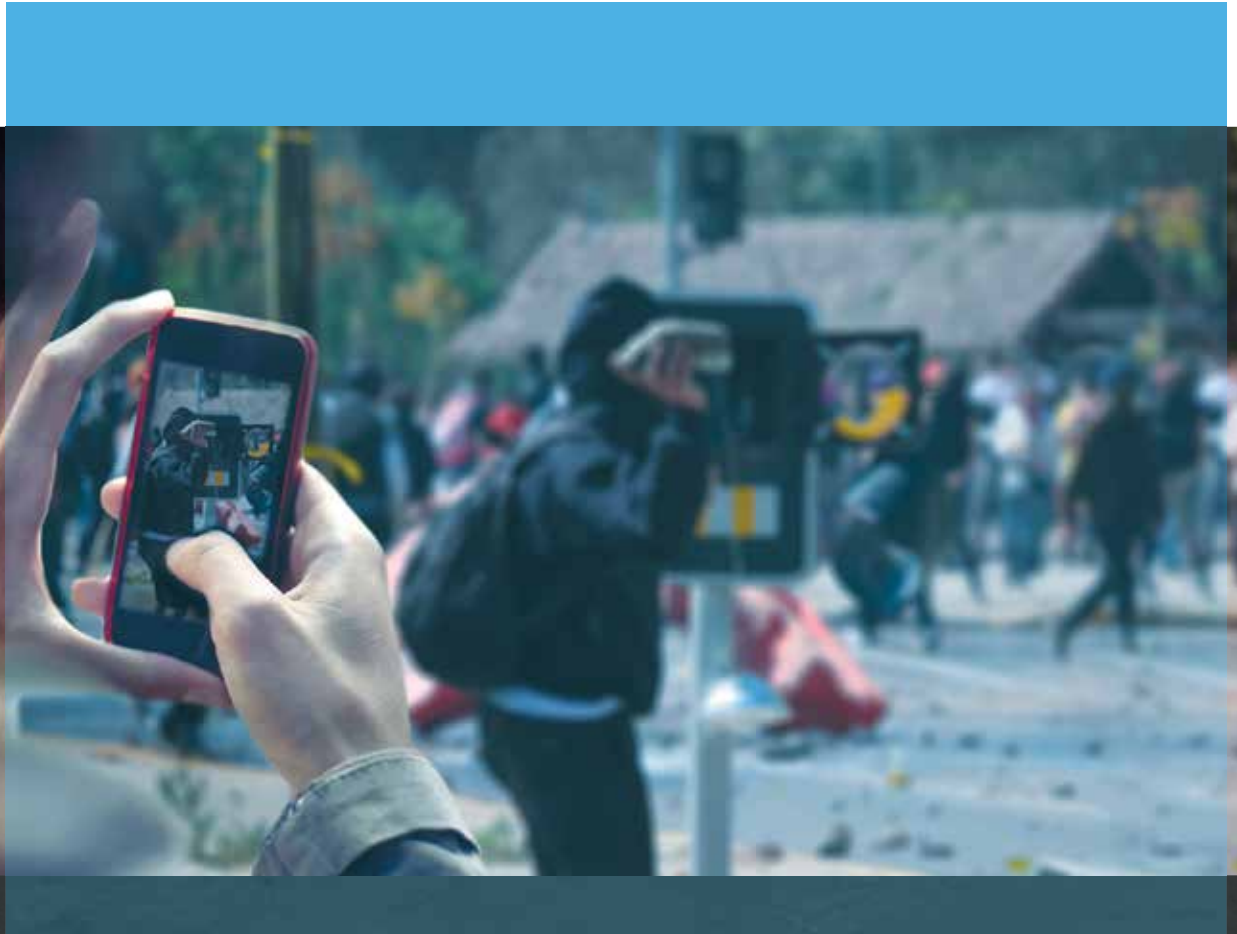




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Social Networking, Social Media
and Complex Emergencies:

an Annotated Bibliography

The background features several overlapping, solid blue geometric shapes. On the left, there is a vertical rectangular bar. To its right, a larger, more complex shape with a pointed bottom-right corner overlaps the bar. Further right, another large rectangular shape overlaps the previous one. The overall composition is abstract and modern, using a single color (blue) against a white background.

Social Networking, Social Media
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Communication and Complex Emergencies Project

The Communication and Complex Emergencies Project is a collaboration between the University of Adelaide's Applied Communication Collaborative Research Unit (ACCRU) and the Australian Civil-Military Centre (ACMC). Its main objectives are to highlight the role of communication, including new and social media, in complex emergencies and in support of humanitarian assistance.

The work focuses on 'what we know' and in doing so maps out a broad array of knowledge while focusing on the functions, strengths and limitations associated with various forms of media, from social networking and social media to radio, television, print and video. The work has a number of outputs that are designed to support each other, including:

- › Social networking and media annotated bibliography
- › Social networking and media issues paper
- › Communication and complex emergencies handbook.

These resources can be found at the ACMC and ACCRU websites (see below).

About the Australian Civil-Military Centre (ACMC)

The Australian Civil-Military Centre (formerly the Asia Pacific Civil-Military Centre of Excellence) was established in November 2008 in recognition of the growing importance of civil-military interaction, and is evidence of Australia's commitment to sustainable peace and prosperity in the Asia-Pacific region and beyond.

The ACMC's mission is to support the development of national civil-military capabilities to prevent, prepare for and respond more effectively to conflicts and disasters overseas. At its core is a multi-agency approach, with staff from a number of Australian Government departments and agencies, the New Zealand Government and the non-government organisation (NGO) sector.

Applying this collaborative approach to working with other government agencies, the United Nations and other relevant stakeholders, the ACMC seeks to improve civil-military education and training, and develop civil-military doctrine and guiding principles.

Through its research program, the ACMC seeks to identify best practice responses to key lessons learned – important for developing doctrine and facilitating training programs – to contribute directly to the ability of the Australian Government to develop a more effective civil-military capacity for conflict prevention and disaster management overseas. For more information contact the ACMC Research Manager:

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About the Applied Communication Collaborative Research Unit (ACCRU)

ACCRU is dedicated to promoting and understanding the role of information, communication and new communication technologies (ICTs) in processes of development and change. ACCRU draws together a group of internationally regarded specialists and emerging researchers into a consortium dedicated to supporting the program, evaluation and research needs of a wide range of organisations that have a role in promoting communication interventions, across a wide range of development themes and country contexts. For more information contact:

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Disclaimer

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1. Introduction

The role that new media and communications technologies have played in the recent 'Arab Spring' uprisings, as well as in recent disaster responses, has sparked a large amount of academic and professional interest in their potential, how they can be harnessed effectively, but also their limitations. As a result, there has been a surge in the production of high quality literature related to social networking, social media and emergency situations.

This annotated bibliography compiles both peer-reviewed literature, typically sourced from academic journals, as well as a range of opinion and technical resources drawn from agencies that have a humanitarian mandate. It is important to note that this annotated bibliography does not seek to present an exhaustive or authoritative list, particularly given the contemporary interest in the subject and the ongoing publication of fresh insights.

While a rapidly evolving field, our interest in developing this annotated bibliography is two-fold. First, this document will act as a valuable resource

for a wide range of stakeholders with an interest in the role of social networking and media in complex emergencies. Second, the evidence presented here underpins a dedicated issues paper that summarises the role of social networking, social media and complex emergencies.

For the purposes of this bibliography the term 'complex emergencies' is deemed to cover political emergencies, conflict situations, conflict-reduction and peacekeeping processes, as well as disaster responses and associated humanitarian assistance.

Methodology

This bibliography contains sources derived from an extensive search from within a ten-year range (2003-2013). For the purposes of the literature search, we adopted a broad definition of social media encompassing a variety of software, websites and technologies that enable user-generated content to be uploaded and shared. These include but are not limited to social networking sites, blogs, collaborative tools such as wikis, content sharing sites such as YouTube, as well as more specialised participatory mapping software, and hybridised 'mashup' programs that combine two or more

of these. Only studies available in English were considered for inclusion in this bibliography.

Once key definitions had been discussed, we conducted a preliminary search after which we identified a broad list of keywords. These terms were subsequently used in the final search process. Search terms included blogs, posts, social, network, media, wiki, Facebook, YouTube, conflict, war, security, peace, natural, disaster, emergency, response, reduction, instability, stabilisation, and so on.

For peer-reviewed journal articles, we searched a number of databases including: Academic OneFile, Academic Search Premier, African Women's Bibliographic Database, Anthropology Plus, Bibliography of Asian Studies, CAB Abstracts, Educational Resources Information Centre (ERIC), Ingenta Connect, JSTOR, Scopus, Sociological Abstracts, and Web of Science.

For grey literature, we searched the following sources: AusAID, Centre for Independent Studies, Communication for Social Change Consortium (CFSC), DAC International Network on Conflict and Fragility (INCAF), Development Studies Internet Resources, DevComm (World Bank), DFID, Eldis, FRIDE, Governance and Social Development Resource Centre, International Committee of the Red Cross, International Peace Research Institute of Oslo (PRIO), OECD iLibrary, Search for Common Ground (SFCG), The Communication Initiative Network, UNDP, UNESCO, UNHCR and UNOCHA.

The searches returned a large number of results. We screened them for relevance through examination of titles and abstracts, with selected studies being subject to a review of their full text. The reference lists of these studies were also checked for interesting sources not identified during the searches outlined above. This method, known as 'snowballing', helped to identify a number of additional relevant sources, which were added to through identification

of some additional sources by the ACMC. A total of 6,239 sources were identified, 146 papers were selected for full text review. Where this review identified considerable overlap in themes some papers were omitted to reduce duplication. A final total of 88 sources are included in this annotated bibliography. Each entry includes the full title of the source, as well as its URL if accessed online, in addition to a list of approximately 3-5 keywords and the summary text.

Thematic Scope

Thematically, this annotated bibliography addresses two related fields of social networking and social media use. These are:

- Social Networking and Social Media for Social Action
- Humanitarian Assistance and the role of Social Networks and Social Media.

The first substantive section examines social networking and social media use by citizens and interest groups in support of increased participation, social action and collaboration. Here, issues such as social networking and media for increased transparency, accountability, political engagement, witnessing, monitoring and citizen journalism come to the fore in the sources reviewed (see Section 2). Within this section sources also address the risks associated with social networking and producing social media, the extent to which international audiences and media organisations have come to depend on user-generated content from conflict zones, and what impact this has. Several papers also address state responses to social media use by groups that oppose them.

Citizen-led social networking and social media has significant influence in complex emergencies, but also links to, informs, supports and sometimes undermines a very different form of communication. This is pursued by humanitarian agencies and volunteer networks, is conducted in support of humanitarian assistance processes, and forms the second major thematic focus for this annotated bibliography.

Social networking and social media use in support of humanitarian assistance has come to the fore in recent years as agencies have discovered the value of using collaborative tools such as wikis and social media platforms. These platforms help to gather and mobilise volunteer networks to rapidly collect, manage, analyse and plot crisis data in order to help understand and direct relief efforts. Crisis mapping has emerged as a critical tool of 21st Century humanitarian assistance, though it is not without its limitations, many of which are addressed in the papers summarised in Section 3.

2. Social Networking and Social Media for Social Action

Aday, S., Farrell, H., Lynch, M., Sides, J. & Freelon, D. (2012) *Blogs and Bullets II: New Media and Conflict after the Arab Spring*, United States Institute of Peace (USIP), Washington DC.

Keywords: social media, Arab Spring, diffusion.

This report re-evaluates the claims made in *Blogs and Bullets I* (2010) in light of the Arab Spring, arguing that the causal role of new media needs to be supported by compelling empirical data. The previous paper distils five levels of analysis (individual attitudes and behaviours, societal connections and divides, collective action, regime repression and international attention), which are revisited in this paper, generating supporting evidence from the Arab Spring. The report outlines three ways in which new media can be refined and improved. This includes paying attention to the failures of social media rather than the existing singular focus on the successes of social media in conflict scenarios. It is argued that attention should be given to cases where new media has failed to

generate a substantial movement. The authors also suggest that researchers need to ask smaller questions rather than questions such as ‘what caused the Arab Spring?’ that are too big to be reasonably answered. The authors also caution that it is important to remember that tyrants tweet too.

It is noted that much of the research to date has focused on how the uprisings were diffused throughout the Arab region, but the authors note that the role of new media as a form of contagion is poorly understood. It is argued that new media did not play a significant role in collective action or regional diffusion during the Arab spring, but that social media was nonetheless important. It is noted that social media is more likely to spread information outside the region and bring international pressure to bear on authoritarian regimes rather than spreading information inside the region. The authors argue that social media’s key function is to bridge information from activists to the mass public, to bridge user-generated content and mainstream media, and to bring local struggles to the attention of the international community.

Allan, D. & Brown, C. (2010) 'The Mavi Marmara at the Frontlines of Web 2.0', *Journal of Palestine Studies*, vol. 40, no. 1, pp. 63-77.

Keywords: Youtube, Israel Defence Force, power.

This paper reviews the YouTube responses to the Israeli Defence Forces' (IDF) raid on the Mavi Marmara. The paper explores social media and viral videos as sites of proxy Israel-Palestine conflict. The authors explore the use of social media sites by the Israeli state – the creation of IDF YouTube channels and recruitment of 'Internet warfare teams' – as a PR strategy. Conversely, the paper explores how activists and academics can use social media to counter these state narratives.

This paper classifies social media (also referred to as 'web 2.0') as YouTube, blogs, Wikipedia, Facebook, Twitter and 'any media platform that allows instant self-publication...' (p. 65). This paper concludes by critiquing the assumption that social media has a 'levelling', democratisation effect on the political landscape. Counter to these assumptions, it is argued that social media has the power to '...evolve, assimilate to power and capital, be assimilated by power and capital, transform; and anyone, regardless of ideology, can master it at any given time' (p. 74), with social media acting as a medium rather than as the message.

Al-Ani, B., Mark, G. & Semaan, B. (2010) *Blogging through conflict: Sojourners in the age of social media*, Proceedings of the 3rd International Conference on Intercultural Collaboration, pp. 29-38.

Keywords: blogs, Iraq, culture.

This paper represents 'a qualitative study of the nature of interactions that emerge in a blog community whose members are experiencing the impacts of ongoing conflict' (p. 29). The Iraqi blogging community was chosen as a case study, with a focus on the role of intercultural interactions in shaping people's experiences of conflict and sense making of their experiences (p. 29).

Blogs are explored in this study as a unique, interactive aspect of social media through which writers are able to create unrestricted narratives (in contrast to Twitter or Facebook which require shorter posts). 142 blog entries were categorised (in accordance with schema developed by Herring et al) as:

- Journalistic, such as accounts relating to events outside a blogger's personal experience
- Personal diaries and/or war diaries, such as personal accounts of a blogger's activity
- Art blogs, such as longer entries either personal or impersonal in nature.

290 comments associated with these blogs were then categorised as either supportive, encouraging, sympathetic, advice, admiration, informative or critical. Blogs were further coded as being Iraqi or non-Iraqi.

It was concluded that intercultural interactions aided people's experiences of crisis or conflict by providing support (pp. 32-33), finding commonality (pp. 33-34), building a knowledge base (pp. 34-35), and in giving advice on the restoration of infrastructure (pp. 35-36). It was further discovered that bloggers and followers demonstrated examples of multiculturalism as well as adaptation to a new culture via assimilation, acculturation, cultural maintenance or becoming a sojourner.

Al-Ani, B., Mark, G., Semaan, B. (2010) *Blogging in a Region of conflict: Supporting transition to recovery*, Proceedings of the 28th International Conference on Human Factors in Computing Systems, pp. 1069-1078.

Keywords: blogs, Iraq, recovery, transition.

This paper represents an empirical study of blogs written by Iraqi citizens during periods of disruption in their country. The paper attempts to merge three research streams:

- Disaster research on how people cope with environmental disruptions
- Research on how people overcome boundaries of interaction through the Internet
- Research on how people use social media to recover from disruption.

The paper analyses 125 blogs in total. This analysis occurs through a model of stages of recovery from

disaster (Hoffman): (i) extreme sense of isolation and disruption, (ii) formation into 'survivor' groups and emergence of new identities, and (iii) return home or settlement in new area. Blogs are explored as an avenue of transition from stage (i) to stage (ii).

The study concluded that blogs facilitate this transition in a number of ways:

- Blogs create a safe, virtual environment in which bloggers can interact free of the violence experienced in the physical environment
- Interactions through blogs in an interactive and personal manner allow a large network of global support and formation of communities
- Blogs enable people experiencing conflict to find support and express their views with others in different physical locations.

The study recommends how technology can better support the use of blogs in these situations.

Al-Maskati, N.A. (2012) 'Newspaper coverage of the 2011 protests in Egypt', *International Communication Gazette*, vol. 74, no. 4, pp. 342-366.

Keywords: social media, mainstream media, Egypt, protest.

This paper explores the newspaper coverage of the 2011 Egyptian protests and their interactions with social media. This paper explores the role of social media in influencing the mainstream media's coverage of events through a content analysis across the newspapers: *Al Ahran*, *Arab News*, *China Daily*, *Guardian International*, *International Herald Tribune* and *Jerusalem Post*. Information was collected across five parameters – (i) word count; (ii) number of stories published on front pages;

(iii) rank and political orientation of people cited in stories; (iv) number of times social media was cited; and (v) how many times keywords (revolution, chaos, human rights, corruption and social media) and their synonyms were portrayed in stories. The paper concludes that national policies, diplomatic relations and geographic proximity played a large role in determining the type and intensity of coverage provided by newspapers. The study also found that journalists demonstrated a clear preference for conventional sources rather than social media stories in their coverage.

Andén-Papadopoulos, K. (2009) 'US Soldiers Imaging the Iraq War on YouTube', *Popular Communication*, vol. 7, no. 1, pp. 17-27.

Keywords: YouTube, soldiers, international conflict, war reporting.

This article examines YouTube uploads from soldiers stationed in Iraq and Afghanistan alongside an examination of the role of social media in perceptions of war and war reporting. This article is primarily concerned with the online proliferation of international conflict through modern communication technologies, the ethical implications of this, and the consequences this has for traditional journalism.

This paper considers homemade videos uploaded to YouTube by coalition soldiers, with consideration being given to format, meanings and communicative functions of these videos and the ways they diverge from traditional war reporting. The uploaded videos were categorised as live recordings of violent confrontation, behind the scenes recordings, and/or tributes to fallen soldiers. The author concludes that these recordings provide the critical perspectives needed for a more open democratic questioning of international conflict.

Aouragh, M. & Alexander, A. (2011) 'The Egyptian Experience: Sense and Nonsense of the Internet Revolution', *International Journal of Communication*, vol. 5, pp. 1344-1358.

Keywords: Internet, Egypt, mobilisation, change.

This article debates the role of the Internet in mobilising for political and social change through an examination of the Egyptian revolution. The authors distinguish between the Internet as a tool for bringing about change from below, and the Internet as a space for the articulation of collective dissent. This article is derived from fieldwork conducted during January-March 2011 including interviews with Egyptian activists, observations of Facebook groups, blogs, social media, other media outlets and observations from Tahrir Square. Social media (or web 2.0) is explored as a tool appropriated by activists despite attempts by the state to use them for counterrevolutionary purposes.

The authors reject the polarisation of utopian and dystopian perspectives on the role of the Internet. Furthermore, they propose a shift away from perspectives that isolate the Internet in contrast to other forms of media (the satellite-Internet divide) by examining the link between social media and satellite broadcasts during the uprising. Finally, the authors conclude by calling for an understanding of the relationship between online and offline political action.

Arnold, D. (2012) 'Syria: A War Reported by Citizen-Journalists, Social Media', Radio Free Europe Radio Liberty, <http://www.rferl.org/content/syria-war-reported-by-citizen-journalists-social-media/24630841.html>

Keywords: Smartphones, mainstream media, Syria, journalism.

This article explores the role of 'citizen journalists', the use of smart phones to document footage, and the use of sites such as YouTube, Twitter and Facebook in the Syrian uprising. The author explores the role of 'citizen journalists' as complimentary to the role of more traditional foreign correspondents and a valuable source of information during times of conflict, often too dangerous for formal, traditional journalist pursuits.

Arriagada, A., Scherman, A. & Valenzuela, S. (2012) 'The Social Media Basis Of Youth Protest Behaviour: The Case Of Chile', *Journal of Communication*, vol. 62, no. 2, pp. 299-314.

Keywords: Facebook, Chile, youth, protest.

This article examines the link between social media use and youth protest in Chile. This article is premised on analysis of data from a 2010 survey of Chilean urban youth (18-29) designed to measure protest behaviour, Facebook use, grievances and dissatisfaction, political and cultural values, individual resources (material, psychological and social) and the use of new media.

The authors explore the role of social media as a means of political action as a trend of particular interest considering the disengagement of youth from conventional politics. This is achieved through

examination of the process by which relationships between social media and political change are formed, and the mechanisms through which these are mediated. Finally, the article explores the contingent conditions under which social media can become crucial to protest by examining the moderating role post materialist values and ideologies (p. 2).

The authors conclude that survey 'respondents with a Facebook account engaged in more protest activities than respondents without a Facebook account' (p. 8). Furthermore, the frequency of use of social networking accounts correlated to higher levels of protest behaviour.

Attia, A.M., Aziz, N., Friedman, B. & Elhusseiny, M.F. (2011) 'Commentary: The impact of social networking tools on political change in Egypt's "Revolution 2.0"', *Electronic Commerce Research and Applications*, vol. 10, no. 4.

Keywords: social networking, Egypt, trust, behaviour.

This commentary explores the impact of social networking tools on political change in Egypt's 2011 revolution. The article discusses social networking factors in regards to the predisposition of Egyptian people to revolt. The authors argue that these factors had a positive impact on attitudes toward social change, which in turn supported individual and aggregate behaviour towards revolution (p. 369).

A literature evaluation identified numerous variables affecting people's behaviour and individual use of social networking tools: (i) trust, (ii) relationships, (iii) loyalty, (iv) value, and (v) word of mouth. These social network factors first influence an individual's attitudes towards change, then their behavioural

intention, before finally influencing their actual behaviour. In an Egyptian context, it is argued that there was a perception of trust on the words of others who were calling for the uprising. This trust also served to reduce ambiguity and suspicion and there was a sense of peer-information as credible and trustworthy.

It was concluded that in Egypt social networking tools demonstrated 'trust, developed and maintained strong relationships, expressed loyalty, obtained value and aggressively used word of mouth to further the cause' (p. 373). These tools helped form positive behavioural intentions to bring about change as well as create and sustain individual and collective uprisings.

Baiardy, M.J. (2011) 'Syrian Conflict Played Out on Social Media', Institute for War and Peace Reporting, <http://iwpr.net/report-news/syrian-conflict-played-out-social-media>.

Keywords: Internet, mainstream media, Syria, journalism.

This article explores the role of the media in mobilising popular dissent in Syria through satellite TV and the Internet. The role of social media is explored through its ability to allow individuals to communicate with the outside world. It is argued that these media have acted as a means of comparison for individuals to explore the rights and freedoms available in other countries in contrast to Syria.

The author explores the positive and negative consequences of social media – the radical change demonstrated by activists on Twitter at the beginning of protests, in contrast to the use of Twitter as a means for the promotion of security forces propaganda. It is argued that social media

is a valuable point of access for journalists, where traditional and international reporting is not permitted and serves to fill a gap in coverage.

Chatfield, A.T., Akbari, R., Mirzayi, N. & Scholl, H. (2011) *Interactive effects of networked publics and social media on transforming the public sphere: A survey of Iran's leaderless "social media revolution"*, Proceedings of the 45th Hawaii International Conference on System Sciences, pp. 2552-2562.

Keywords: social media, revolution, democracy, power.

This article is situated alongside arguments that a hierarchical 'command and control' leadership is required to coordinate military and disaster response (p. 2552). The authors explore the concept of leaderless 'social media revolutions' used to transform the public sphere and engage in collective political action (p. 2552). The authors write from the perspective of casual agency used to effect change in social systems to examine the proposition that the interactive effects of networked publics and social media would transform the public sphere for conversation when democracy is much desired by citizens (p. 2552).

The results suggest two important findings: (i) the nature of social media use changed from social use during ordinary times to political use during social upheaval and times of crisis; (ii) there are shared perceptions that a social and political influence over how technology was used would be related to realising the potential political power of social media (p. 2561).

Chiluwa, I. (2012) 'Social media networks and the discourse of resistance: A sociolinguistic CDA of Biafra online discourses', *Discourse and Society*, vol. 23, no. 3, pp. 217-244.

Keywords: blogs, Biafra Online Campaign Groups, online protest.

This study focuses on how social media networks (SMN) have been used through social protest and resistance to oppression and power abuse. The study applies a sociolinguistic-based Critical Discourse Analysis (CDA) to investigate how sociolinguistic issues (virtual community, identity, language and social interaction) are used to project self-determination and the struggle for independence (p. 217). The article focuses on blogs and discussion forums held by the Biafra Online Campaign Groups (BOCG). The authors conclude that the BOCG have mainly used discussion forums and websites for their online activism without immediate corresponding offline protests.

Comminos, A. (2011) *Twitter Revolutions and Cyber Crackdowns: User-generated content and social networking in the Arab Spring and beyond*, Association for Progressive Communication (APC).

Keywords: user-generated content, Arab Spring, protest, surveillance.

This paper investigates the use of user-generated content (UGC) and social networking sites during the Arab Spring. The paper explores lessons learnt from the Arab Spring in regards to social networking and offers some suggestions on safe and informed use of social networking by protestors and activists facing oppressive regimes. The opening section of the paper explores whether the uprisings can correctly be called Twitter or Facebook revolutions,

concluding that the causes of protest and uprising involve a combination of non-technical factors. The following sections explore some of the uses of social media by both activists and the state, noting that while UGC helped to draw the world's attention to the uprisings and acted as a valuable tool for protesters and mainstream media, it also assisted oppressive regimes to crack down on dissent by inhibiting the flow of information and as a tool of surveillance and harassment.

The author explores some of the problems presented by the use of USG in struggles for democracy and human rights, namely:

- Social media and surveillance (pp. 11-12) – the potential for social networking platforms (that link user identity) to amplify state surveillance
- Mobile phones and geo-location – serving to add location to user content further enhancing surveillance capabilities
- Removal of UGC from social networks (pp. 12-13) – Facebook's policies leading to the shutting down of political activists' pages (such as the use of fake names being prohibited)
- Reliability and veracity of UGC (p. 13) – potential for social media to be used to spread misinformation and propaganda, making it the responsibility of users to critically examine the veracity of claims on these platforms
- Sockpuppetry and astroturfing (p. 14) – the use of social networking to disseminate views that appear to be legitimate or spontaneous (voices of grass-roots movements) but are actually campaigns by individuals, corporations and/or governments.

The paper concludes with a series of recommendations on the safe use of UCG platforms:

- › Anonymity (p. 16) – the creation of anonymous and secure content or content generated through pseudonym (despite it being banned by Facebook, it is not banned by other sites such as Twitter)
- › Safe and informed use (pp. 16-17) – awareness of the strengths and weaknesses of social networking platforms and the variance of privacy settings and policies
- › Backup and mirroring of content (p. 17) – ultimately it is the social networking host that has control over online content therefore users should plan for this by backing up and mirroring content
- › Alternatives to Facebook (p. 17) – giving users the ability to exercise greater control (e.g. Pligg Diaspora, Status.net)
- › UGC under surveillance (p. 17) – adopt platforms offering end-to-end encryption where possible (access through an HTTPS encryption) to avoid the stealing of user names and passwords.

Cottle, S. (2011) 'Media and the Arab uprisings of 2011: Research notes', *Journalism*, vol. 12, no. 5, pp. 647-659.

Keywords: social media, mainstream media, Arab Spring, censorship, diffusion.

This paper seeks to examine the broad, overlapping ways in which media systems and communication networks conditioned and facilitated the 2011 Arab uprisings and communicated them to the rest of the world. New social media (YouTube, Twitter, Facebook, blogging and the use of mobile phones)

played an important role in the communicating, coordinating and channelling of opposition to overcome state controlled national media.

It is proposed that what is striking in nature about these revolutions is the speed of succession across the region and also the different ways in which media and communications became inextricably infused from within them. It is argued that labelling these events 'Twitter (or Facebook) revolutions' fails to do justice to the political and media complexities involved.

The author argues that there are a number of different ways in which media systems and communications networks have become inscribed inside the Arab uprisings:

- › Analysis of how state-run media have served to legitimise political regimes and how mainstream news media have played a less than critical role when reporting on them
- › The role of the media and globalisation in penetrating societies with a Western democratic culture
- › The role of social media in conveying these images across everyday life and helping perpetuate them as part of mundane sociability
- › The role of social media in tandem with mainstream media to alert international news media
- › The repressive responses of the state in an attempt to censor and contain the out-flow of images
- › The role of media in acting as a contagion for hope and inspiration
- › The role of international mainstream media in recognising and legitimising protests

- The 'ripple effect' of the uprisings, leading other repressive states to tighten their media censorship
- The necessary role of the media to alter the world to repressive acts of inhumanity and human rights abuses and create a public, international forum of deliberation and condemnation.

Desouza, K.C. & Lysenko, V.V. (2012) 'Moldova's Internet revolution: Analyzing the role of technologies in various phases of the confrontation', *Technological Forecasting & Social Change*, vol. 79, no. 2, pp. 341-361.

Keywords: Internet, Moldova, social mobilisation.

This paper analyses the role of Internet and phone based ICTs in Moldova's 2009 revolution, paying particular attention to the ways technologies were used during various phases of the uprisings. This was written through a comprehensive exploratory case study using primary online sources such as Twitter, social network sites, blogs and news items; and secondary data sources such as video, audio and interviews of participants to the events.

Numerous phases of conflict were identified (preparation, ignition, active street protests, and post-protest information war) and the role of Internet based ICTs across each of these stages examined. The study found that protesters organised their initial mobilisation through social network sites and via SMS; Twitter was generally used during the later phases of the revolution for communication (both locally and globally) about the conflict. Through skilful use of Internet based ICTs, it is possible to conduct a successful revolution without noticeable offline organisation.

El-Hamamsy, W. (2011) 'BB = BlackBerry or Big Brother: Digital media and the Egyptian revolution', *Journal of Postcolonial Writing*, vol. 47, no. 4, pp. 454-466.

Keywords: social media, Egypt, censorship.

This article examines the use of digital media in the 2011 Egyptian revolution, with a particular focus on the role of digital media as a tool of control and manipulation as well as a mode of resistance. The article explores the government's reaction to the threat of digital media through a chronology of an imposed period of Internet and phone blockage during the revolution. The paper explores this event through two lenses: (i) manipulation of blockage, and (ii) manipulation through propaganda.

The article concludes by suggesting the government's attempts to manipulate the revolution served to inject protesters with greater momentum. It is argued that cutting off avenues for communication among protesters only led to more people taking to the streets to gain first-hand access to events as they were unfolding. Further, the blockage that the government intended as sabotage came to be used by protestors for resistance and solidarity.

Eltantawy, N. & Wiest, J.B. (2011) 'Social Media in the Egyptian Revolution: Reconsidering Resource Mobilization Theory', *International Journal of Communication*, vol. 5, pp. 1207-1224.

Keywords: social media, Egypt, resource mobilisation.

This article seeks to open dialogue about the use of resource mobilisation theory in explaining social movements and their impact through exploration of

social media in the 2011 Egyptian revolution (p. 1207). It is argued that resource mobilisation theory can aid in understanding the Egyptian revolution in terms of the influential context and resources because of their ubiquity and potential for communicating messages to massive, global audiences (p. 1218). However, it is important to consider the influence of social, political and historical contexts as outside conditions.

The authors argue that social media played an instrumental role in the success of protests and concludes by recommending further examination of the proposed incorporation of social media as an important resource for collective action and organisation of contemporary social movements.

Ghannam, J. (2011) *Social Media in the Arab World: Leading up to the Uprisings of 2011*, Center for International Media Assistance (CIMA) & National Endowment for Democracy, Washington DC.

Keywords: social media, Arab World, infrastructure, context.

This report was commissioned in the period leading up to the uprisings in Tunisia, Egypt in early 2011. This study was based on 35 interviews, primary and secondary documents, commentaries, websites, blogs, etc. Key findings of the study included:

- About 17 million people in the Arab region are using Facebook and demand is expected to grow
- Arab governments are developing telecommunications infrastructure for increased Internet connectivity to meet future demands of digital economies (particularly among youth)

- Alongside these technical increases, comes efforts to monitor, filter and block websites
- Authorities regularly call upon emergency laws and cybercrimes laws to provide justification for arrests, fines and incarcerations for individuals engaged in online writings
- Some Arabic government officials are active contributors to social networking platforms
- The popularity of online news is gaining in comparison to traditional news media
- Indigenous social media platforms are progressing beyond 'blogging' by offering community-driven quality news, online video stories and forums for greater interactivity.

Ghannam, J. (2012) *Digital Media in the Arab World One Year After the Revolutions*, CIMA, Washington DC.

Keywords: social media, mainstream media, Arab Spring, journalism, accuracy.

This report traces the global followings acquired by individuals on Facebook, Twitter and YouTube during the Arab Spring. The report was commissioned with the objective of documenting the continued impact of social and digital media in the Arab region. Key findings of the study included (p. 8):

- Tens of millions of contributors are creating and sharing online content and influencing the information channels throughout the Arab region
- Digital media enables the blending of journalists with citizen journalists and activists

- Arab governments and religious groups are targeting journalists and bloggers for reporting on sensitive issues (e.g. religion)
- The battle for the Arab blogosphere (post-revolution) has turned from a means of circumventing government Internet controls to a 'cyberwar' for the narrative rights of sites such as Facebook and Twitter; often this narrative is influenced by governments and political parties in the region
- Social media is reinvigorating traditional media
- Social media is serving as political cover whereby sensitive stories are floated on social media sites to guide potential reactions before being broadcast in more traditional media
- There have been complaints that contributors in the region lack ethics and fail to meet journalistic standards
- There are significant concerns regarding the accuracy and authentication of user-generated content.

The report recommends advocacy organisations and media outlets act as champions for ethical standards and to ensure information flows are fair and accurate. Furthermore, it is noted that training is needed for online citizen-journalists to assist in authentication of information.

Hall, G. (2009) 'Wikination: On Peace and Conflict in the Middle East', *Cultural Politics: an International Journal*, vol. 5, no. 1, pp. 5-25.

Keywords: Wikipedia, Middle East, peace, conflict.

This article explores ideas of peace and conflict through an examination of the Middle East. The author explores the potential of digital media for making affirmative political interventions in particular contents. The article advocates the use of sites such as Wikipedia to experiment with new ways of organising institutions, cultures and communities that do not typically display liberal, democratic, Western ideals.

The author outlines a six-step approach for conceptualising peace and conflict: (i) establishment of identity (national or individual) by distinguishing from what it is not; (ii) division of identity from 'outside' or 'other'; (iii) revelation that identity depends upon conceptualisation of others; (iv) recognition that identity is another form of 'other'; (v) recognition of relationship to 'other' as internal dislocation; and (vi) this internal dislocation is not a crisis or threat. The author explores this approach through an analysis of Chantal Mouffe's political theory, exploring examples of notions of terrorism in the Middle East as contrasted to hegemonic democracy in the West. The author then argues that this six-step model has been incorporated too uncritically into liberal, Western ways of thinking, leading to ignorance of the complexities of conflict-peace situations.

In order to facilitate this, the author has established a wiki-site to enable a user-generated, open structured, geographically open, continuous, and highly responsive forum for discussion of political, theoretical conflict-peace processes.

Hamdy, N. & Gomaa, E.H. (2012) 'Framing the Egyptian Uprising in Arabic Language Newspapers and Social Media', *Journal of Communication*, vol. 62, no. 2, pp. 195-211.

Keywords: Facebook, Twitter, mainstream media, Egypt.

This study examines the January 2011 uprising in Egypt and how this was framed in the state-run media, independent media and social media through a quantitative content analysis of 800 documents between 25 January 2011 and 12 February 2011.

- Semi-official state-run sources comprising 72 stories and 80 opinion columns from Al-Ahram, Al-Akhbar, Al-Messa and Al-Jomhoriya
- Independent newspapers comprising 640 news stories and 160 opinion columns from Al-Shorouk, and Al-Youm-Al-Sabee
- Social media comprising 150 'We are all Khaled Saed' Facebook group posts, 450 tweets posted on #Thawra#25jan, and 200 posts on popular Egyptian blog sites.

This data was then coded according to author, publication type, title, and keywords determined from extensive literature review. The study then analyses this data under four key research questions: (i) 'How were the protests framed by each medium?' (ii) 'How was protest defined in different media?' (iii) 'How were the causes of protests portrayed in the media?' and (iv) 'How were solutions portrayed in the media?'

The study concluded that governmental newspapers framed the event as a conflict or a 'conspiracy on the Egyptian state' with a focus on the economic consequences, and painting the event as harmful

and catastrophic. In contrast, social media defined the event in more human terms as 'a revolution for freedom and justice' with a focus on the suffering of ordinary Egyptians. It is further concluded that independent media represented a middle ground between these two camps, reflecting the fact that authors of these publications have multiple loyalties.

Furthermore, it was concluded that social media defined the events as a revolution from the beginning, with semi-official press reluctant to recognise the events as a mass social movement. Semi-official sources attributed the causes of the crisis to foreign meddling, while independent press and social media emphasised corruption, injustice, poverty and oppression as the main causes.

Harkin, J., Anderson, K., Morgan, L., Smith, B., Nassif, H. & Othman, D. (2012) *Deciphering User-Generated Content in Transitional Societies: A Syrian Case Study*, Internews, Washington D.C.

Keywords: user-generated content, mainstream media, Syria, verification, editorial guidelines.

This study explores the role of social media and user-generated content (UGC) as a tool for news organisations during the Syrian uprising (with tight controls on foreign media in the early months of the uprising). This paper was written through an examination of BBC Arabic and Al-Jazeera Arabic and how they have used UGC from social media in their coverage of Syrian uprisings. Research included a brief literature review, in-depth interview with media practitioners and commentators, and a content analysis of news and current affairs output. Data was analysed across three key areas: (i) the management of UGC in line with editorial guidelines, (ii) the

verification of material, and (iii) audience information regarding the origin of these sources.

It was concluded that both sources have extensive editorial guidelines for the use of UGC. It was indicated that UGC was strongly verified off-air; however, the study revealed instances where the audience was not informed of this verification, indicating a departure from editorial guidelines. While the source of UGC was often cited to audiences (e.g. YouTube and Facebook), further information was not provided frequently. The report concludes by recommending greater transparency.

Harlow, S. (2012) 'Social media and social movements: Facebook and an online Guatemalan justice movement that moved offline', *New Media & Society*, vol. 14, no. 2, pp. 225-243.

Keywords: Facebook, Guatemala, mobilisation, organisation.

This paper explores Facebook pages relating to a posthumous video that surfaced in May 2009 (during which prominent lawyer Rodrigo Rosenberg blamed the Guatemalan president for his murder). The Facebook pages created in response to these accusations called for the president's resignation. The article finds that social networking sites were used to mobilise an online movement that moved offline, helping organise massive protests.

In-depth interviews were conducted in Guatemala City during Summer 2009 with the four leaders of the Facebook movement. Content analysis was conducted of two Facebook pages: Justicia Rodrigo Rosenberg and Movimiento Civico Nacional. The research questions explored include: (i) who were the organisers of the movement; (ii) whether Facebook users were more likely to employ diagnostic, prognostic or motivational frames

(Gerhards and Rucht 1992); (iii) which thematic frame was most strongly stressed among Facebook comments – agency frame, values frame, adversarial frame, or reflective frame; (iv) what were the topical sub-frames among Facebook comments; (v) the frequency of user posts in relation to frames and sub frames; (vi) kinds of information posted by Facebook users; and (vii) the level of interactivity between the real world and virtual world as facilitated by Facebook.

The study revealed that the organisers of the movement were young males in their 20s intending to inform the public about Rosenberg's murder. These organisers expressed surprise at how quickly Facebook mobilised so many people. The study explored whether Facebook users were most likely to employ various frames: (i) diagnostic – to define a problem or assign blame; (ii) prognostic – detailing possible solution; and (iii) motivation – inciting individuals to act or mobilise. The majority of comments were framed in such a way as to motivate others to get involved in the movement and participate in offline activities. Results were categorised into thematic frames: (i) agency (inciting action); (ii) values (such as ideals of justice, and democracy); and (iii) adversarial (portrayal of movement as good versus evil), reflective (discussions of consequences), or other. The majority of results were calling for agency or action, illustrating the link between the online movement and offline action. It was concluded that rather than using Facebook as a forum for discussing justice or criticism, it was used to organise protests or showcase photos of protests.

It was also concluded that while low-frequency Facebook users framed their posts in terms of idealised values, high-frequency users were more concerned with mobilising offline protest. The study concludes by acknowledging that protests were not sustained and suggests that until the digital divide is closed, social media generated movements will

be limited in scope and impact. The study suggests that the Internet has the capacity for creating and enhancing political activism.

Harlow, S. & Johnson, T.J. (2011) 'Overthrowing the Protest Paradigm? How The New York Times, Global Voices and Twitter Covered the Egyptian Revolution', *International Journal of Communication*, vol. 5, pp. 1359-1374.

Keywords: blogs, Twitter, mainstream media, Arab Spring.

This study analyses coverage of the Arab protest, examining whether the 'protest paradigm' found in mainstream media is replicated in social media and blogs and the impact this has on credibility (p. 1359). It is submitted that mainstream media often relies on this 'protest paradigm' by focusing on tactics, spectacles and dramatic actions rather than the underlying reasons for the protest (p. 1359). Data was collected through a content analysis of 2011 Egyptian protest in *The New York Times*, Twitter feed of *Times* reporter Nick Kristof, and citizen media site Global Voices. Research questions explored the frames that were employed across the different media, the portrayal of protesters, the use of citizen versus official sources, and the role of authors as neutral observers of analysts/actors

Results indicated that *The Times* adhered to the protest paradigm, maintaining an impartial role by framing the protests in terms of their spectacle, quoting official sources and devaluing protesters as reporters. Conversely it is suggested that Global Voices and the Twitter feed legitimised protesters, served as commentators and analysts and provided more opportunity for interaction by readers. These sources framed the protests in terms of injustice and expressing sympathy for protesters.

Hofheinz, A. (2011) 'Nextopia? Beyond Revolution 2.0', *International Journal of Communication*, vol. 5, pp. 1417-1434.

Keywords: social media, Arab Spring, social relations, entertainment.

This article represents a plea for a shift in paradigm: (i) to encourage greater focus on the social and cultural effects of the Internet and mobile phone use; (ii) to find out what impact the use of these media has on conceptions of the individual and their role in the construction of knowledge and values; and (iii) to determine how these dynamics are embedded in more long-term historical developments promoting a greater role for the individual (p. 1417). The author argues that due to a preoccupation on political change the influence of the social and cultural domains of the Internet has been largely ignored and promotes a need to take the social dimensions of social media more seriously. It is suggested that research should focus on five distinct levels of analysis investigating how new media can: (i) transformation of individual attitudes and willingness to engage in political action; (ii) mitigate or exacerbate group conflict; (iii) facilitate collective action; (iv) help regimes to spy on/control their citizens; and (v) garner international attention (pp. 1422-1423).

The author argues that it is necessary to investigate the social constructions of political authority in the Arab region and explore the role of social media beyond political activism for maintaining and extending social relations and for entertainment. The author argues that this use of social media has been dismissed as 'futile' throughout much of the literature. The article then proceeds to consider changes in attitude, particularly in regards to authority, with social media acting as the medium or questioning such attitudes. The author calls for greater research in regards to social media and the Internet as a means of communication among peers

and how this influences attitudes. In doing so, he calls for further research into the hypothesis that Internet users develop feelings of: (i) being in greater control over what they want to read/look at; (ii) being entitled to judge sources of information/authorities; and (iii) having the right to express themselves publicly and be active participants (p. 1427). In doing so, it is hoped that such research would highlight a greater role for individual users reinforced through peer interactions and social networking.

Iskander, E. (2011) 'Connecting the National and the Virtual: Can Facebook Activism Remain Relevant After Egypt's January 25 Uprising?', *International Journal of Communication*, vol. 5, pp. 1225-1237.

Keywords: Facebook, Twitter, Egypt, momentum.

This article explores the debates around social media and uprisings in relation to the 2011 Egyptian revolution. The author argues that social media was central to the way the Egyptian uprising was mediated and explained to the outside world, as well as the way it was experienced by Facebook and Twitter users. It is argued that the lead up to the January events extended beyond the creation of a Facebook group (We are all Khalid Said) in June 2010, but that the creation of this group served to increase momentum for protest as the group acted as a tangible focus. It is suggested that social media provided the tools for expression, although it is acknowledged that the majority of political views expressed on social media is not indicative of the views of majority of Egyptians.

The author points to the inclusive nature of the protests as having a transformative effect to help overcome the polarised political climate. It is argued

that if social media is to assist in the facilitation of political debate and activism it must engage with traditional forms of media and civil society to ensure the dialogue around Egypt's future remains grounded in a national context rather than a virtual one.

Karagiannopoulos, V. (2012) 'The role of the Internet in political struggles: Some conclusions from Iran and Egypt', *New Political Science*, vol. 34, no. 2, pp. 151-171.

Keywords: Internet, Iran, Egypt, protest.

This article focuses on the Green Movement in Iran in 2009 and the events in Egypt in 2011. The authors present social media as a factor crucial to organising protest. However, they also argue that the focus around the Internet and social media as facilitators of these events has prevented a deeper understanding of the ways in which digital communications can influence uprisings – 'perceiving the use of these online applications as the epicentre of national political struggles, a perception reinforced by the western media hype, promotes a unilateral and narrow understanding of these events' (p. 162).

This paper assesses whether the Internet's communicative applications are crucial to these struggles, a mere accelerator, unavoidable events or a counterrevolutionary surveillance tool. The article explores the socio-political context, Internet policies in Iran and Egypt, and the way protesters and the state used social media applications. It is noted, 'The Internet can be the first, partial step towards engagement offline and even a parallel, simultaneous level of engagement during those political outbreaks. However, it cannot finalise a victory without actual offline struggle' (p. 170). It is argued that the Internet is an indispensable component of contemporary politics due to its potential for expression,

pervasiveness, and facilitation of political activity. Furthermore, the Internet and social networking sites are conceptualised as a neutral tool with the potential to facilitate and malign various purposes.

Khamis, S. & Vaughn, K. (2011) 'Cyberactivism in the Egyptian Revolution: How civic engagement and citizen journalism tilted the balance', *Arab Media and Society*, no. 14.

Keywords: social media, Egypt, activism, mobilisation, expression.

The authors of this article argue that the role of new media in the Egyptian revolution was important in three ways (p. 5):

- › Enabling cyber activism as a trigger for street activism
- › Encouraging civic engagement by increasing mobilisation, organisation of protests and political expression
- › Promoting new forms of citizen journalism as a platform for expression and documentation.

The paper also explores how these new media avenues enabled citizen journalism through providing forums within which individuals could document protests, disseminate their own words and images, and spread information to the outside world through transnational media. The authors conclude that the largely leaderless nature of the Egyptian revolutions is evidence that they were a genuine expression of public will. Empowerment of protestors was enhanced through social media by:

- › Generation of a public commons for free speech, evident through free expression of views on social networking sites

- › Provision of a means for people to associate with likeminded individuals, evident through assembly in public spaces organised by social media
- › Provision of a virtual place for assembly and the popularity of certain protester Facebook pages
- › Supporting the capabilities of protesters to plan, organise and execute protests
- › Allowing the public to engage in citizen journalism, evident from the proliferation of cell phone photography and video online, and throughout mainstream media
- › Creation of a 'virtual global public sphere' where acts of political resistance could be proliferated and supported internationally.

The authors' remark that the combined efforts of civic engagement and citizen journalism tilted political and communication balance in favour of freedom fighters and political activists.

Lewinski, M. & Mohammed, D. (2011) 'Deliberate Design or Unintended Consequences: The argumentative uses of Facebook during the Arab Spring', *Journal of Public Deliberation*, vol. 8, no. 1.

Keywords: Facebook, Egypt, mobilisation, deliberation.

This article discusses how Facebook's design and context influenced opportunities for deliberation during the Egyptian uprising. The authors argue that many benefits for open and critical argumentation result from unintended, uses of online technologies (p. 2). It is argued that this is evident in the ways that technologies such as Facebook or YouTube

become 'major arenas for deliberative mobilisation and serious argumentation' (p. 2). The task for deliberation and argumentation scholars is to connect macro-issues to micro-happenings of ordinary deliberations among the Arab people's revolt. The authors attempt to do so by focusing on the uses of technologically designed tools for communication.

It is suggested that the tensions inherent in intentionally designed deliberation technology might seriously undermine the realisation of opportunities for deliberative engagement. Furthermore, through the process of the colonisation of the colonisers, actual use of communication technologies brings about more organic spontaneous deliberations emerging from unlikely sites. The article then proceeds to examine 'status updates' of an Egyptian Facebook user. Observations included:

- Expressions of concern or wishes for a better future
- Political jokes included in comments to express points of view in a friendly way
- Social networking exchanges were never too confrontational or rigorous
- Social networking sites are considerably looser than other media
- Social networking sites prioritise opportunities for friendly discharge of burden of proof over persistent criticism.

The authors conclude with the question: at what extent will the nature of the point of departure (the fun of social networking) limit the quality of the point of arrival?

Lim, M. (2012) 'Clicks, Cabs, and Coffee Houses: Social Media and Oppositional Movements in Egypt, 2004-2011', *Journal of Communication*, vol. 62, no. 2, pp. 231-248.

Keywords: blogs, Egypt, Kefaya movement, online activism.

This paper explores the relationship between social media and political change during the Egyptian uprisings in 2011 through a broader examination of online activism. It is argued that successful social movements were those using social media to expand networks of disaffected Egyptians as well as brokering relationships between activists, globalising resources and extending reach to political elites. The author argues that the genesis of online activism can be traced back to the rise of the Kefaya movement in 2004 and the emergence of the Egyptian blogosphere well before Twitter and Facebook were available in the country. The author also argues that the initial success of the Kefaya movement resulted from the strategic use of mobile phones and the Internet to enhance capacity, coordinate activity and lessen dependence on mainstream media to access the public. The author also argues that the role of social media in the Egyptian revolution was not merely technological but also socio-political – representing the tools and space for various communication networks to emerge, connect, collapse and expand. Social media has enabled the formation and expansion of networks beyond the reach of the authoritarian government, and facilitated new connections among middle-class youth. The article summarises that the role of social media in the Egypt revolution can be understood through its relation to social networks and mechanisms of mobilisation.

Lotan, G., Graeff, E., Ananny, M., Gaffney, D., Pearce, I. & Boyd, D. (2011) 'The Revolutions Were Tweeted: Information Flows during the 2011 Tunisian and Egyptian Revolutions', *International Journal of Communication*, vol. 5, pp. 1375-1405.

Keywords: Twitter, Arab Spring, dissemination.

This article explores the production and dissemination of news on Twitter during snapshots of the 2011 revolutions as seen through information flows from activists, bloggers, journalists, mainstream media outlets and other engaged participants. The authors differentiate between different user types and analyse patterns of sourcing and routing information among them. The authors outline the symbiotic relationship between media outlets and individuals, and the distinct roles particular user types appear to play (p. 1376). Using this analysis, the authors discuss how Twitter plays a key role in amplifying and spreading timely information across the globe.

Data was collected from Twitter datasets containing key terms. Information flows were arrived at by: (i) classifying tweets into similar bins; (ii) sorting bins by size (number of tweets included); (iii) choosing the top 10 per cent; and (iv) randomly choosing 1/6 to identify 850 flows for further analysis (p. 1382). Actors were then classified into various types (e.g. mainstream media organisations, bloggers, activists, etc). Findings included:

- Majority of actors were individuals
- Tweets from organisations tend to be more polished and tightly managed (e.g. grammatically correct)

- Tweets from organisations tend to be more frequently retweeted
- In Tunisia, bloggers were a large source of news dissemination. However, in Egypt a larger volume of news was generated from media organisations and journalists
- Bloggers and activists are more likely than other actors to retweet content
- Journalists appear to have a strong preference for retweeting other journalists' content over content from other actors.

The article concluded that interested parties generally fall within three categories: (i) people directly connected to the incident or people who want to know about the state of their homes and/or families; (ii) mainstream media organisations who want to learn about development on the ground so they can provide coverage across media channels; and (iii) general interest readers who want to know about events as they happen. The authors argue that these actors, working together, constitute a particular kind of online press.

Lynch, M. (2011) 'After Egypt: The Limits and Promise of Online Challenges to the Authoritarian Arab State', *Perspectives on Politics*, vol. 9, no. 2, pp. 301-310.

Keywords: social media, Arab Spring, power, oppression.

This paper explores the ways in which the Arab uprisings challenged core findings of political science literature regarding the durability of the authoritarian Middle Eastern State. Particularly pertinent to this line of inquiry is the impact of social media on contentious politics (an area which the author argues

requires significant new thinking). The author argues that sophisticated literature explains the persistence of authoritarian states in the face of disruptive forces (Al-Jazeera, Arab satellite television, global trends towards democratisation, unemployment crisis and globalisation) as a result of access to oil, over-developed security forces and political culture. It is argued that these perspectives were destabilised as a result of the uprisings.

The author considers four ways in which new media is seen as challenging the power of the Arab state:

- Promoting contentious collective action – by lowering transaction costs, raising the costs of repression to authoritarian regimes, and scaling up protests from local to global
- Limiting or enhancing the mechanisms of state oppression – the role of Arab regimes in maintaining control over the Internet
- Affecting international support for the regime – particularly in shaping US views of events
- Affecting the overall control of the public sphere – the diminishing ability of the state to dominate and control the public sphere.

Manrique, M. & Mikail, B. (2011) 'The Role of New Media and Communication Technologies in Arab Transitions', FRIDE Policy Brief, no. 106.

Keywords: ICTs, Egypt, Tunisia, democracy.

This article explores the role of Information Communication Technologies (ICTs) in processes of political change. Within this, the authors distinguish two phases: (i) their role in bringing down old regimes, and (ii) their significance in consolidating transitions to democracy once the revolutionary dust has settled. ICTs (particularly mobile phones and social networking) can be useful for uprisings against

authoritarian regimes by fostering international support for political change, and mobilising activists and citizens. Similarly, the same technologies can be used to consolidate democratic rule by preserving an open public sphere and helping citizens to link in with political actors and debates.

The article argues that while ICTs made an essential contribution to overthrowing Mubarak and Ben Ali, experiences from other parts of the world demonstrate that their role in sustaining democratic transition is less certain (p. 1). The article concludes that ICTs should be considered a facilitating rather than a decisive factor for democratic movements.

Melvin, N. & Umaraliev, T. (2011) *New Social Media and Conflict in Kyrgyzstan*, Stockholm International Peace Research Institute (SIPRI), Sweden.

Keywords: social media, Kyrgyzstan, political tool.

This paper explores the uses of social network sites, blogs and mobile platforms in two 2010 Kyrgyzstan conflicts (March-April and May-June). The authors argue that new media played complex and shifting roles across these conflicts and should be viewed alongside more conventional mobilisation techniques. It is argued that the Kyrgyzstan conflicts highlight the use of new media as a political tool, while simultaneously pointing to the importance of a set of enabling conditions – technical, economic, and socio-political – that define the ways in which these tools can be used.

The paper explores how social media differed across the two periods of conflict:

- March-April: new media was used to facilitate citizen journalism (and bypass state censorship) and to provide crucial information. During this time there was

a sense of a united community working towards a common goal.

- › May-June: this period highlighted some of the weaknesses of new media with the online community beginning to reflect and magnify societal tensions and polarisations. During this period the online community became a battleground for ethnic tensions as members of competing groups harnessed the power of new media to present their views.
- › New media made a valuable contribution to the protests, yet the authors acknowledge that new media did not replace conventional forms of protest; instead it acted as a supplement to existing protest tools.

Nanabhay, M. & Farmanfarmaian, R. (2011) 'From spectacle to spectacular: How physical space, social media and mainstream broadcast amplified the public sphere in Egypt's "Revolution"', *Journal of North African Studies*, vol. 16, no. 4, pp. 573-603.

Keywords: social media, mainstream media, Egypt, protest, spectacle.

This study examines the impact of the media during the 2011 Egyptian uprising and the interrelation of the physical (protests), the analogue (satellite TV and mainstream media) and the digital (Internet and social media). The paper explores the relationship between protesters and the media (both social and mainstream), and the relationship between the two categories of media and the physical events of protest.

Furthermore the authors examine the intersection of these spaces with the 'amplified public sphere' – drawing on D'Arcus' (2006) notion of 'spectacles of dissent' in which activists renegotiate the visibility of the public sphere through protest and media networking. The authors argue, expanding on this concept, that the Egyptian uprisings amplified this 'spectacle' into a 'media spectacle' that globalised the public sphere through blanket coverage of the physical events. The study revealed that the move from 'spectacle' to 'spectacular' took place over two stages:

- › Spectacle – citizen video (in comparison to mainstream media footage) was more widely produced and reproduced in the first few days of the revolution. During this time citizens were able to produce their own footage and distribute it through social networks (bypassing mainstream media).
- › Spectacle to spectacular – provision of 24/7 mainstream media coverage from Tahrir square and a shift from the organisation of protest (where social media dominated) to international spectacle (where mainstream media dominated).

Three main findings emerge from this study:

- › Reprogramming communication networks through which protesters were not only able to activate their own physical networks but were also able to generate their own media network and 're-programme' the mainstream media, setting the media agenda. This highlights the ability of participants to directly reach the public without reliance on mainstream media
- › From spectacle to spectacular (explored above)

- › Media amplification, which allows digital media to be copied, reproduced and distributed with great ease by either the mainstream media or other social media users. This leads to a symbiotic relationship between producers and consumers.

Newsom, V.A., Lengel, L. & Cassara, C. (2011) 'Local Knowledge and the Revolutions: A Framework for Social Media Information Flow', *International Journal of Communication*, vol. 5, pp. 1303-1312.

Keywords: social media, Tunisia, Egypt, local knowledge.

This study examines the importance of local/indigenous knowledge in Tunisia/Egypt as local contexts that have shaped revolutions. The authors explore how social media and communication technologies were used to engage in social change. The study questions how change elsewhere in the region may emerge in different ways. It is argued that the essentialism implicit in the Western imagery about the Middle East and North Africa plays to assumptions that all citizens throughout the world are oppressed by or complicit with authoritarian rule. In doing so the discourse fails to recognise distinct social, economic, political and cultural traditions across the region.

Local knowledge is explored in its ability to generate original material across social and digital media through citizen journalists, Tweepsters and bloggers.

While acknowledging that efforts to reclaim citizen space across the region have not fared nearly as well as they did in Tunisia and Egypt, some similarities in communicative contexts are worth noting:

- › The ideal that voices are shared/heard in these spaces is hampered by the fact that these spaces are themselves restricted by the power structure of the Internet and offline cultures that dictate access
- › There is a schema of information production and consumption of 'citizen journalism' in communication technology spheres whereby individuals speak out, resistance leaders reframe individual voices to suit their needs, resistance rhetoric is then locally disseminated, the government obtains this rhetoric and reframes it to their needs, and this new rhetoric is then disseminated on an even wider scale at which point the West receives it and reframes it a final time.

It is argued that this schema demonstrates how the flow of information through digital and social media can be negotiated at various stages and by various actors. Therefore, once local knowledge (or what is assumed to be local knowledge) is entered into the process it becomes open to manipulation and bias and the knowledge produced may travel through multiple levels of gate keeping. The authors conclude by noting that in order to promote democracy building throughout the region, it may be necessary to reframe and reshape local knowledge to ensure it has a greater impact and reaches the global stage. However, information flowing from the region through digital and social media requires interrogation of the perceived impact of this information.

Pearce, K.E. & Kendzior, S. (2012) 'Networked Authoritarianism and Social Media in Azerbaijan', *Journal of Communication*, vol. 62, no. 2, pp. 283-298.

Keywords: Internet, Azerbaijan, bloggers, networked authoritarianism.

This study examines the role of the Azerbaijan government in dissuading Internet users from political activism. The authors examine how digital media was used for networked authoritarianism. The authors argue that '...greater documentation and publicising of suppressed dissent can derail political protest' (p. 284) – challenging the conventional wisdom that access to the Internet offers an effective means to contest authoritarian systems.

The authors explore the issue of the 'donkey bloggers' (the 2009 arrest of two political activists/journalists for 'hooliganism' after they aired a YouTube video parodying a government policy and questioning human rights). This event was widely reported across the press, and in the months that followed support for activism dropped significantly among the population. It is argued that by publicising reprisals for relatively mild forms of dissent the government provoked a sense of anxiety among the population. This ability was only afforded to the government, paradoxically, through the opening up of the Internet, allowing them to reach frequent Internet users who had become a source of concern.

The campaign against the 'donkey bloggers' was perpetrated through the practice of 'networked authoritarianism'. The main findings of the study were:

- Younger people and those with more education used the Internet more often (p. 292).

- Respondents who were in a stronger socio-economic position were less likely to support protest while those struggling to meet their needs were more likely to (p. 292).
- Frequency of Internet use was positively related to attitudes toward the protest in 2009 only (p. 292).
- While there was little change among Internet users in general, support for protests fell dramatically among those who used the Internet the most (frequent users) (p. 293).

It is concluded that the government successfully dissuaded frequent Internet users from supporting the protests and average Internet users from using social media for political purposes.

Ray, T. (2011) 'The "story" of digital excess in revolutions of the Arab Spring', *Journal of Media Practice*, vol. 12, no. 2, pp. 189-196.

Keywords: social media, Arab Spring, narratives.

This paper explores theories of media attention to examine political and media practices in the Arab world used to generate the 'Arab story'. The author argues that a unified and shared meaning emerged in spite of an excess of mediation because the oppositional narrative (using social media as a conduit) had its roots in real-world political practices resulting in unity among people (p. 189). During the 'Arab Spring' numerous elements of the 'media ecosystem' were competing for people's attentions (blogs, tweets, Facebook posts, YouTube, text messages, radio, TV, print media, etc).

It is argued that the problem concerning a unified meaning of the world is not only a question of information overload, but also relates to the collapse of grand narratives used to understand socio-political factors in the past. This 'collapse of grand narratives' has two components:

- Collapse of master narratives and the end of postmodernist ideology
- Actual collapse (1980s) of the Soviet Union, whose existence constituted the binary framework within which politics and global relations was understood.

Running alongside this discourse is what is referred to as the 'digital Arab street', personified through social media and more traditional, local media. It is argued that a different framework is needed to understand how a shared narrative emerges at this 'street level' (facilitating the Arab revolutions). It is argued that social media was able to occupy the narrative space of a large selection of Arab society due to responsiveness to people's needs (in contrast to traditional media's unresponsiveness). These factors allowed an oppositional narrative to emerge (from 'the street') and overwhelm the official narrative.

Rinke, E.M. & Röder, M. (2011) 'Media Ecologies, Communication Culture, and Temporal-spatial Unfolding: Three Components in a Communication Model of the Egyptian Regime Change', *International Journal of Communication*, vol. 5, pp. 1273-1285.

Keywords: social media, Egypt, media ecologies, communication.

This paper aims to: (i) learn from 2011 revolutionary processes in order to understand them, and (ii) inform a model of political communication in contemporary Arab societies. The authors propose critical steps for giving structure to present attempts to understand the events – including giving greater attention to three neglected components of a prospective communication model:

- Media ecologies – the availabilities of different forms of communication to different actors involved in the revolutionary processes at different points in time
- Communication culture – in the Arab world in regards to what and how communication is socially accepted, conducted and furnished for social change
- Temporal-spatial unfolding of events.

The authors then offer several observations from throughout the revolution to flesh out analysis and provide starting points for coming inquiries into the role of communication in anti-authoritarian movements. These observations include:

- In the pre-protest period the Internet (Facebook, etc) was used primarily as a platform for knowledge seeking and sharing (exchange of information about strategies for successful political resistance)
- During the protest, social networking sites became important information tools for locals and for international journalists – producing a constant stream of activist-generated news
- Despite these facts, the spill over from virtual spaces to the streets would not have been possible without other communications (mobile phone, email, satellite TV)

- › In the pre-protest period activists used social media to publish anti-government criticism not seen/permitted in traditional media
- › Sensitive information regarding protest venues was spread via more targeted communication channels like email and SMS (drawing on more personal networks).

The paper concludes by noting that communication technologies are not beneficial to processes of democratisation, *per se*, but that the role of technology depends heavily upon who is using them/ for what purpose. Different media serve different functions that are constrained by the more/less favourable opportunity structures in which relevant actors are situated, as well as by the process of character communication. The paper concludes by proposing a holistic communication model of anti-authoritarian protest (p. 1283).

Russell, A. (2011) 'Extra-National Information Flows, Social Media, and the 2011 Egyptian Uprising', *International Journal of Communication*, vol. 5, pp. 1238-1249.

Keywords: social media, mainstream media, Egypt, control, journalism.

This article examines two emerging characteristics of digital networked journalism, as highlighted by the Egyptian revolution (p. 1239):

- › The ability to retain centralised control of communication eroded because contemporary networked communication thrives on increasing grassroots pervasiveness, and because it retains a hackable/malleable quality whereby users can re-work the technology to their advantage

- › The influence of the networked decentralised reporting of the revolution on mainstream news outlets altered both the nature of the news products and the professional norms and practices of journalists.

The author argues that, in effect, mainstream news outlets were '...delivering a meta story being reported by people hooked into digital social networks' (p. 1239). The article explores how software developers and hackers joined with (or in some instances replaced) journalists, editors and publishers as the champions of the news (p. 1240). It is acknowledged that networked social media played a significant role in the political communication war in two main ways (to draw the attention of mainstream media):

- › Message control
- › Deconstructing the news

The author concludes by noting that networked communication is fuelled by participation (the more participation the better the network) and that the result of this spread of grassroots participation is decentralisation (both in terms of news media and politics).

Salah Fahmi, W. (2009) 'Bloggers' street movement and the right to the city. (Re)claiming Cairo's real and virtual "spaces of freedom"', *Environment and Urbanization*, vol. 21, no. 1, pp. 89-107.

Keywords: blogs, Egypt, transformation, space, activism.

This paper explores the ways in which blogger activists have articulated dissent, particularly in regards to spatial tactics such as boycott campaigns,

cyber-activism and protest art. This is explored through the ways in which activists managed to reclaim Cairo's contested public spaces and transformed them into zones of protest/sites of urban resistance (p. 89). The paper explores the restrictive laws regarding organisation of public rallies that helped develop the Egyptian blogosphere into a virtual platform for socio-political expression, with bloggers frequently navigating between online activism and social spaces for protest (p. 92).

For bloggers, alternative news websites are an important avenue through which critical information is generated and received. However, the effectiveness and efficiency of these online networks remains limited in comparison to 'the streets' as '...a vital locus for the audible expression of collective identities...' (p. 97). The paper focuses on a group called the Egyptian Movement for Change and how their online blogger activism translated to street encounters and meetings. It is argued that 'the emergence of grassroots street activism opens up a new public sphere through which the role of urban governance might be contested to accommodate cultural identities within various forms of spatiality and popular democracy' (p. 89). It is concluded that the Egyptian blogosphere represents an '...urban hub acting as an interface between events in the streets and the Internet' (p. 106).

Sigal, I. (2009) *Digital Media in Conflict Prone Societies*, Center for International Media Assistance (CIMA) & National Endowment for Democracy, Washington DC.

Keywords: media technology, conflict, control, dissemination, local capacity.

This paper focuses on the changing role of media and conflict in recent years, and the essential role that media plays as an element of conflict. New media technologies allow for increased communication and information dissemination in the context of conflict, particularly in the role of citizen media, providing increasing numbers of people with the tools to record/share their experiences (p. 89). The paper concludes with a series of recommendations for policy makers. In order to cope with these changing landscapes, the policy environment surrounding media in conflict settings is beginning to formulate methodologies and strategies to consider how changes in media technology could affect fundamental issues of political participation (p. 12). The range of strategies incorporated in conflict situations can be summarised as follows (p. 14):

- Limiting undesirable information by countering or blocking inaccurate information or messages that promote hate and/or violence
- Expanding positive information by developing information interventions to provide messages in support of peace
- Building local capacity to perform both of the above by working with local media outlets, civil society and government to propagate skills, policies and technical capacity that will enable the production and dissemination of accurate information and the reduction of inaccurate information.

It has become clear that increased access to information and ability to produce media content has both positive and negative consequences. Some of these dichotomies include the presence of digital media networks to encourage violence as well as lead to peaceful solutions, and the potential to increase dialogue as well as increasing polarisation (p. 8). The report proposes a series of recommendations to support independent,

pluralistic and sustainable media in post-conflict scenarios. These recommendations are based on a set of characteristics designed to help describe the relationship between digital media and conflict. Recommendations from this report include:

Complexity, Diversity and Unpredictability of Media (pp. 23-25):

- Media/conflict strategies should acknowledge the dynamic nature of media technologies and prepare for disruptions as a core element in planning
- Frameworks/tools for analysis need to consider the dynamic/shifting nature of media
- ‘Predictions about the shape of future media should be approached with caution’ (p. 24)
- Policies should adopt innovative, experimental and flexible practices to correspond with attempts of traditional media to adapt to new digital media
- Simple formulas that attempt to deal with conflict inside a rigid framework are likely to fail (p. 25).

Control and Openness (pp. 25-26):

- ‘Command-and-control approaches to media are likely to fail in a networked participatory media environment’ (p. 26). Therefore, policy should focus on ensuring quality information and a plurality of perspectives rather than attempting to restrict or dominate media flows
- Tools for monitoring, censoring and removing web-based information sources are generally not successful in stopping all forms of online speech (p. 26)

- Sound policy will ensure multiple diverse paths for civil discourse (providing alternatives for discourse rather than attempting to stop hate speech) (p. 26).

Connections and Networks (pp. 26-28):

- Networked media require different policy approaches with regards to state boundaries (i.e. development policies that focus exclusively on the nation state neglect the regional and global nature of networked media and the impact of international satellite TV) (p. 27)
- Project design should prepare for the fact that conflict can be sparked by the spread of information beyond traditional audiences (p. 27).

Digital Solutions and Human Problems (pp. 28-29):

- Policies that articulate digital media networks as polarising or unifying ignore the ambiguous and multifaceted nature of online/networked communities (p. 28);
- Existing media should not be ignored. Instead, focus should be given to ways of integrating different media platforms and exploring technical developments that facilitate convergence between traditional and digital (p. 29)
- Projects need to be explored that seek to engage communities with digital media tools in order to self-generate content of interest/ need (p. 29).

Starbird, K. & Palen, L. (2012) *(How) will the revolution be retweeted? Information diffusion and the 2011 Egyptian uprising*, pp. 7-16.

Keywords: Twitter, Egypt, participation, propagation.

This paper examines microblogging information diffusion activity during the 2011 Egyptian political uprisings, specifically how the use of the 'retweet' function on Twitter reveals a great deal about information contagion across large numbers of people and how this behaviour figures into social movements. It is theorised that the 'crowd' participated in at least two ways: (i) by expressing solidarity with the cause, and (ii) by protesters embracing this show of interest and aligning with it (giving credibility to the idea of solidarity through social media).

Findings:

- People in different locales attempted to make tweets their own by slightly adjusting the meaning to take into account the event progression or contributing new tags/short comments
- The remixing of elements of tweets shows some degree of shared understanding of its purpose and kept the information propagating (i.e. collective work being added to keep the tweet relevant and interesting).

The authors explore the differences between information that appeals to the larger crowds as opposed to those directly on the ground. The results suggested interplay between both external and grassroots realms, particularly in terms of casting light on events happening in other parts of the world. It is argued that if those on the ground find value

in the propagation of a tweet, then perhaps that is one of the real measures by which one decides how much a role social technology plays in revolutions (p. 12). Through their analysis, the authors identify a bias towards broad appeal tweets, messages of solidarity with the Egyptian cause and high-level news (p. 12). Less popular tweets were those that contained detailed information from the ground or offered very specific details about the situation in Cairo. By exploring the most retweeted accounts, it is determined that those who were actively tweeting from Cairo were most retweeted/recommended (p. 15).

This paper suggests a relationship between different measures of tweet behaviour, social context and location. It is argued that retweets serve as a crowd-pondered recommendation system (constituting a form of work/collective work). The research on the use of the retweet mechanism shows the crowds doing work in two ways to make it functional: (i) expression of social solidarity through the collective, observable creation of a tweet-based framework; and (ii) individual work with a collective effect through retweeting as information filtering and recommendation.

Touri, M. (2009) 'News blogs: strengthening democracy through conflict prevention', *Aslib Proceedings: new information perspectives*, vol. 61, no. 2, pp. 170-184.

Keywords: blogs, conflict, transparency, power.

This paper aims to offer greater insight into the role of blogs in the creation of a more transparent news media system. A framing theory is applied as a conceptual tool to re-interpret existing evidence of the performance of news blogs during situations of political conflict and war. The analysis incorporates

empirical examples of reporting on conflict and war in the blogosphere.

The author explores how the issue of power defines the framing of conflict by traditional news media, serving to prioritise the interests of authority and media organisations. Within this context, blogs have the potential to dilute the traditional process of frame production and in turn, potentially transform the role of the news media in situations of conflict and war. The results demonstrated that by promoting alternative and progressive voices, blogs have the capacity to shift power over framing away from the usual sources (in news reporting) and turn the media system into a greater constraining factor for governments. Blogs enable a wide range of sources to access mainstream media, representing voices that are often distanced/marginalised from political power. Blogs are also able to maintain commentary without the sponsorship associated with media organisations. The author argues that this enhances the credibility of blogs.

Tufekci, Z. & Wilson, C. (2012) 'Social Media and the Decision to Participate in Political Protest: Observations From Tahrir Square', *Journal of Communication*, vol. 62, no. 2, pp. 363-379.

Keywords: Facebook, Egypt, protest, participation.

This paper demonstrates that social media (especially Facebook) provided new sources of information that the Egyptian regime could not easily control and were therefore critical in shaping how citizens made individual decisions about participating in protests, the logistics of protest, and the likelihood of success (p. 363). Data was collected through a survey of media use by participants in the

Tahrir Square protests (starting 24 February). 1,200 interviews were conducted with people who had participated in the protests.

Findings:

- An overwhelming majority of respondents used phones for communicating about the protest (p. 369)
- Social media greatly increased the odds that a respondent attended protests on the first day of protests (p. 363)
- Half of the respondents had produced and disseminated visuals from the demonstrations (mainly through Facebook) (p. 373)
- People learned about the Tahrir Square protests primarily through interpersonal communication, Facebook, phone contact, or face-to-face (p. 363)
- Traditional media was a lesser source of information for people about the protest (despite significant media coverage) (p. 370).

The 25 per cent composition of women participants indicated a significant push by women to be part of the political process.

Van Niekerk, B., Pillay, K. & Maharaj, M. (2011) 'Analyzing the Role of ICTs in the Tunisian and Egyptian Unrest from an Information Warfare Perspective', *International Journal of Communication*, vol. 5, pp. 1406-1416.

Keywords: ICTs, Tunisia, Egypt, communication, dissemination.

This article aims to provide an alternative understanding of the role of technology and

information in the events that led to the resignations of the Tunisian and Egyptian presidents, as analysed from an Information Warfare (IW) Lifecycle Model. IW is a concept whereby information and its supporting system have value and therefore can be considered an asset, defended, or used to conduct an attack. The Lifecycle Model aims to describe an IW incident from the initial context to the resolution and consequences.

The uprisings are analysed using the IW Lifecycle Model across a variety of fronts:

- Context – with the aggressor as the general population, targeting senior government and the international community for support. The motivation is to remove oppressive governments and the objective is to call to attention a population that is unhappy with a corrupt regime
- Attack – the protests were designed to break the will of the government and ‘technology was exploited to provide a delivery mechanism for the anti-government sentiments and as a form of command and control’ (p. 1411). In this instance, social media and the Internet are classified as ‘offensive weapons’ to garner support and sympathy from the international community
- Consequences and phenomena – the parking of similar protests throughout the region as well as intense scrutiny from the international community
- Defence – reports of the government hacking into social media sites to mitigate the spread of information as well as the censoring and shutting down of Internet services in an attempt to prevent communication.

Through this analysis it is apparent that ICTs were employed as a communication tool to disseminate information to both local and international audiences. Initially social media served to disseminate news of and reasoning behind the protests; however, once the protest gained momentum the need for social media was reduced (p. 1412).

Wagner, B. (2011) “‘I Have Understood You’”: The Co-evolution of Expression and Control on the Internet, Television and Mobile Phones During the Jasmine Revolution in Tunisia’, *International Journal of Communication*, vol. 5, pp. 1295-1302.

Keywords: ICTs, mainstream media, Tunisia, regulation.

This article explores the ‘Jasmine Revolution’ (Tunisian uprisings late 2010, early 2011) and the regulatory regime across three media and communication technologies – Internet, TV and mobile phones – against the backdrop of a system that was previous heavily regulated by the state. The article also explores the regulation of television networks and mobile phones. This is explored against the backdrop of repeated, unsuccessful attempts by the government to regulate satellite TV (e.g. Al-Jazeera). The analysis focuses on the role of Al-Jazeera to circumvent state control via satellite. It is also argued that the focus on Internet-based reporting systems allowed for an unregulated source of information at the height of the protests, and that the network’s professional editing system provided information in a more organised, accurate way. Mobile phones acted as a key source for organisers of protests, but were also subject to surveillance and control, with authorities having complete access to conversations.

The article concludes by noting that:

- › While Internet control clearly co-evolved with Internet protests, the same cannot be said for TV and mobile phones
- › The hybrid models of communicating protest (combining Internet, TV and mobile phones) seem to have been the most resilient during the revolution
- › The Internet control regime led to increased functional differentiation among media
- › The importance of cooperation between new media (Internet) and traditional media (TV) for mobilisation and information dissemination.

Wall, M. & Zahed, S.E. (2011) "I'll Be Waiting for You Guys": A YouTube Call to Action in the Egyptian Revolution', *International Journal of Communication*, vol. 5, pp. 1333-1343.

Keywords: YouTube, Egypt, activism, expression.

This article explores the ways in which YouTube videos of an Egyptian youth activist (Asmaa Mafouz) contributed to the development of a new political language for Egypt. The authors argue that this was achieved in two ways: (i) by providing a safe space to create an individual public political self, and (ii) by modelling a new form of citizenship and activism for Egyptians. Despite the government's control of the media, Mafouz's video (initially posted on Facebook then reposted on YouTube) – calling for protests against the government – was allowed to go viral and was quickly spread through Egypt's youth via social networking sites.

The authors examine four video-blogs ('vlogs') featuring Mafouz as a means of exploring the link between participatory and social media and protest and dissent. The political language of these posts was analysed and it was found that:

- › The language used in these videos is simplistic (occasionally colloquial) and capable of being understood by virtually any Egyptian who heard it
- › She employs a personal story in order to make her case (thereby embodying the participatory nature of YouTube and other social networking sites)
- › The use of visual medium (personal video) and the power of social networking combine to inspire political activism and this seems to be a significant moment in the evolution of political communication
- › While bloggers in Egypt popularised the use of colloquial language to discuss politics, the use of video furthers them to create a new, intimate way of communicating about politics.

It is also argued that these videos had greater significance in Egypt (in comparison to the West) due to the country's suppression of free expression and political activities. It is argued that the visual properties of YouTube make personal identification (through face and name) a more compelling act – 'self-staging' or the potential means of generating social and political transformation of one's self. The authors argue that this ability to create a public self is inherently tied to the public-ness of posting a video on YouTube and therefore making it available to anyone. The authors conclude by noting that when the state shuts off meaningful public participation in political and social life, citizens will seek other outlets through which to express themselves – in particular participatory and social media. While this

is not a new phenomenon, what has emerged is an amplified version of political communication with greater intensity, which enables voices of activists (such as Mafouz) to be disseminated to larger networks and previously unconnected groups.

Ward, W. (2009) 'Social Media and the Gaza Conflict', *Arab Media and Society*, no. 7, pp. 1-6.

Keywords: YouTube, Facebook, Gaza, war, amplification.

This article explores the ways in which the Israeli state used the military to control media on the battlefield, while both Israel and Palestine attempted to influence public opinion using social media. This is explored in the context of the January 2009 Hamas conflict in Gaza. As part of this campaign, the Israeli military debuted its own YouTube channel to broadcast clips of surveillance and airstrikes in an attempt to show off its technological command and weapons capabilities. Similarly, Hamas fighters produced videos of rocket factories. Conversely, supporters from both sides used social media to advertise their side's plight – particularly on Facebook with users 'donating their status' to display an up to date tally of the dead and wounded from each side, or the status of airstrikes and attacks.

It is argued that the role of social media in these conflicts was elevated as a result of Israel's decision to impose a media blackout on Gaza, barring foreign correspondents from the territory. After this, the media dynamics in Gaza centred on a handful of Palestinian journalists who worked across a range of media (new and traditional) to provide information and footage – particularly through blogs and Flickr. This is enhanced by the decision by TV outlets to make their raw footage available online for free. Ultimately it is argued that social media cannot replace the depth and breadth of coverage that

would have been afforded to traditional journalists. However, its role amplified the trickle of information that escaped the blockade. It is also argued that despite garnering considerable media attention, the formation of Facebook groups tended to attract individuals with relatively low commitment levels.

Wilson, C. & Dunn, A. (2011) 'Digital Media in the Egyptian Revolution: Descriptive Analysis from the Tahrir Data Sets', *International Journal of Communication*, vol. 5, pp. 1248-1272.

Keywords: Twitter, Egypt, Tahrir Data Project, dissemination.

This article presents primary analysis of data from the Tahrir Data Project (gathered data on media use during the Egyptian revolution). The Tahrir Data Project data was gathered from informal interviews with central actors in the protest movement. The Project contains three data sets: (a) protest participants, (b) transnational public that followed developments and spread information online, and (c) coordinators who used sophisticated media strategies to mobilise popular participation. Dataset (a) was gathered through a protestor survey and informal interviews; dataset (b) involved analysis of a transnational twitter set and archival analysis of tweets bearing the hashtag #jan25; and dataset (c) is based on a coordinator survey and semi-structured in-depth interviews.

Preliminary analysis suggested that social media use was NOT dominant in demonstrations, but may have played an important role in connecting and motivating protestors. Certainly, social media was not as central to protestor communication as the hype surrounding the 'twitter revolutions' would suggest. However, social media was certainly identified as being more reliable, having higher relay rates and motivating others to participate. Results

suggested that Twitter was used to actively and successfully engage an international audience in the Egyptian revolution. Furthermore, this discourse was dominated by a relatively small group of power users within a large group of passive users who offered support, shared content and re-tweeted power user content. This suggests that a small group of Twitter users in Egypt generated a significant amount of content that was consumed and mobilised by a small group of transnational actors, leading to a discourse of largely passive participation. Therefore Twitter is useful as a broad information dissemination tool, fostering low-intensity transnational network activity.

The article concludes by acknowledging that digital (and social) media was an integral and driving component in the media landscape, despite not being central in Egyptian protest activity. The real-time, transnational discourse on Twitter is compelling in nature, with a suggested relationship between transnational discourse and grounded protest activity.

Yamamichi, M. (2011) 'The Role of Mobile-Enabled Social Media in Social Development', World Bank, <http://mobileactive.org/research/role-mobile-enabled-social-media-social-development>

Keywords: mobile phones, Internet, social development, empowerment.

This brief paper seeks to develop analysis on the role of social media in social development, with particular focus on the diffusion of mobile phones and the Internet. In the context of social development, ICTs can impact social development by:

- Enabling faster and easier information delivery
- Creating networks and venues for information exchange

- Improving efficiency and transparency of government and administrations;
- Transforming people's personal, education and business experiences
- Decentralising decision-making and empowering people.

Social media can be differentiated from other media due to the following characteristics: (i) it is Internet-based, (ii) high mobility and ubiquity, (iii) focus on users, (iv) promotion of multi-way group communication, (v) large-scale and flexible interactive participation, (vi) co-creation, and (vii) low cost. These characteristics line up with the World Bank's operation principles for social development – inclusion, cohesion and accountability. The article offers a table (Table 2) outlining the types of activities by individuals that social media can support for social development. These include (see Table 2 for more information):

- Obtaining information
- Publishing opinions and providing feedback
- Virtual group discussions
- Organising events
- Sharing files, photos and video clips.

This paper concludes by acknowledging the potential of social media to broadly empower people and encourage them to take cohesive actions and call for a more accountable administration. However, the author also proposes some policy implications in order to make social media more effective in the long run. These include: paying attention to marginalised communities to ensure that a 'social media divide' is not created; encouragement of private-sector innovation; exploration of the role of social intermediaries (such as NGOs); the creation of a sound competitive ICT environment; and coordination of social media with government policy.

Youmans, W.L. & York, J.C. (2012) 'Social Media and the Activist Toolkit: User Agreements, Corporate Interests, and the Information Infrastructure of Modern Social Movements', *Journal of Communication*, vol. 62, no. 2, pp. 315-329.

Keywords: Facebook, Twitter, Egypt, Syria, user guidelines.

This article argues that the information policies of the firms behind social media platforms (Facebook, Twitter) can inhibit activists and empower authoritarian regimes. The article focuses on the evolving policies, functionalities and user guidelines that affect the use of social media by activists. The authors argue that the architecture of social media shapes its uses and limits at two levels: (i) the application's programming code sets the range of usability; and (ii) user's actions are enabled and constrained by company policies and user terms governing intellectual property, community policing provisions, anonymity, and offensive and violent content (p. 316). The focus of firms is primarily on increasing users, improving usability, boosting revenue, avoiding negative PR, accessing new markets, etc (p. 316). It is argued that these goals can conflict with the use of social media as tools for civil society and popular mobilisation.

This is explored through an analysis of four cases, chosen as they involved use of a primary social media platform, credible and verifiable documentation was available, and interference with activists' purposes was apparent:

- 'We Are All Khaled Said' Facebook group: this group became a central platform for debate throughout the Egypt revolution and helped mobilise protestors. This group was created through the use of a pseudonym

and Facebook administration deactivated the page due to a policy of banning anonymous users. The group was eventually relaunched

- YouTube's videos from Syria: the absence of professional journalists in Syria led to the use of YouTube by citizen journalists to post footage. This footage was often graphic in nature and YouTube removed a popular video (showing the battered body of a boy allegedly killed by authorities). This was removed for violating YouTube's policy on shocking and disgusting content. The video was later restored after a prominent journalist lobbied for its return
- Community policing abuse from the Facebook campaign – an Arabic language group on Facebook began identifying Facebook users known to be atheists and calling group members to report those users for violating the site's anonymity policy. Several prominent bloggers and activists had their accounts removed or blocked as a result of this. Community policing practices can be easily turned against activists or members of minority groups
- The authoritarian use of social media by the 'Syrian Electronic Army': the Syrian Electronic Army was a hacker group with the aim of bringing down, defacing and targeting sites of resistance across social media. The group posted activists' contact information, threats against critics and pro-regime messages on social network sites. These sites garnered mixed responses from social media sites with inconsistent removal of pages and reinstatement of others.

These cases illustrate how prohibitions on anonymity, community policing practices, campaigns from regime loyalists and counterinsurgency tactics

work against democratic advocates (p. 318). The authors argue that social media firms will continue to limit anonymity, prohibit content and depend on community policing, while governments will continue to leverage against these firms by pursuing strategies of infiltration and surveillance. The paper concludes by recommending six strategies that activists might use to maintain social media as a tool for collective action (p. 325):

- › Exerting their power as consumers by jumping to new social media platforms
- › Use of the law by creating legal remedies against social media companies that put users at risk
- › Appeal directly to governments (e.g. the United States) that claim to be committed to an open Internet and democratisation
- › Work to enhance industry self-regulation
- › Pressure large social media companies via long-term advocacy
- › Embrace the development of ‘civic technologies’ as untethered platforms for further innovation.

3. Humanitarian Assistance and the role of Social Networks and Social Media

Aday, S., Farrell, H., Lynch, M., Sides, J., Kelly, J. & Zuckerman, E. (2010) *Blogs and Bullets: New Media in Contentious Politics*, United States Institute of Peace, Washington DC.

Keywords: mashup, storytelling, emergency, photos.

This paper presents a new web 'mashup' system for individuals to retrieve information about emergencies and disasters. It is acknowledged that during times of emergency management geography plays a crucial role, within which the visual representation of information makes it more tangible to users. The proposed system is designed to identify location metadata (latitude and longitude), as well as temporal data (what time a photo was taken) to enable users to quickly retrieve photos of certain places over certain intervals.

The authors identify that four dimensions are useful to emergency 'mashup' systems: (i) spatial – latitude and longitude, (ii) temporal – date and time intervals, (iii) social – recommendation and collaborative filtering, and (iv) situational – storyboards.

The system developed (eStoryS – an emergency storyboard system) was then evaluated in three ways:

- An analytical evaluation of eStoryS in comparison to other systems available
- A heuristic evaluation whereby expert reviews assess compliance with usability principles
- An experimental evaluation whereby participants were asked to perform certain tasks within the system.

The eStoryS tool allows users to search for a geographic area at which point geo-referenced photos will be displayed and placed on the map according to their location. View levels range from country view to street view. Users are also able to retrieve photographic data by shot date within a particular range and create/share their own pictorial content. User data and history of interactions with the system are stored in a server database and is a useful tool for analysing user behaviour.

It was concluded that a collaborative storytelling tool allows users to easily generate and share spatial/temporal photos that supports social navigation. In this way, users' past interactions with the system

are employed as recommendations – impacting on the way information is presented during other interactions. Furthermore, the system was useful for both people involved in an emergency (information retrieval, visual information about possessions/ objects) and for emergency professionals (editing of storyboards to indicate status before/during/after an emergency and to coordinate aid on site, etc).

BBC Media Action (2012) 'Still left in the dark? How people in emergencies use communication to survive – and how humanitarian agencies can help', BBC Media Action Policy Briefing no. 6, <http://www.bbc.co.uk/mediaaction/resources/policy.html>

Keywords: two-way communication, convergence, communication principles, capacity development.

This paper explores the explosion in access to communications technologies among communities affected by disaster. A number of challenges are identified in association with the changing climate of communications technologies – in particular the ability of humanitarian agencies to catch up and stay ahead of developments.

The paper identifies the most important trends for humanitarian practitioners, including:

- Growing demand for interaction: communication as a two-way process facilitated through social networking;
- Social media use in emergencies: the increased influence of social media on the more traditional flow of information and incorporation into existing communication systems

- Convergence of old and new: integration into existing information systems (such as the broadcasting of local radio stations online) and the use of social media to facilitate meaningful, real-time dialogue with communities
- The role of diasporas: as a key audience for local media, as well as a source of assistance during times of disaster providing information for those on the ground and seeking information about loved ones
- The role of the private sector: with the private sector taking on more of a 'donor role' that is often not recognised by the traditional humanitarian system. The private sector is capable of contributing a wide range of expertise, local knowledge and access to consumers.

The paper then goes on to explore what communication means to survivors. The authors note that communication has a strong psychosocial dimension. Furthermore, the benefits of effective two-way communication for organisations are large in comparison to an approach based on traditional information exchange. The paper suggests that communities in emergencies are capable of leveraging communication technologies to organise their own responses. Communications enable survivors to connect with other forms of support (family, friends), mobilise help and organise their own relief effort in real-time.

The paper then explores what communication means to aid agencies, arguing that the communication process has become central to effective relationships, mitigating conflict, and identifying and preventing the spread of rumours and misunderstanding (p. 6). The paper argues that the changing communication environment emphasises the need for humanitarian agencies to take steps

and adapt to new technologies. It is suggested that a number of steps are needed to ensure adequate consideration of the new communication landscape by concerned agencies:

- › The hiring and resourcing of dedicated communication staff
- › Recognition and prioritising of local skills
- › Cooperation with the private sector
- › Analysis of the communication landscape
- › Consideration of entire populations rather than just direct beneficiaries
- › Focus on meaningful interaction rather than message delivery
- › Attempts to listen to local media, social media, etc.
- › Need to overcome fears surrounding feedback
- › Recognition of the continuing importance of face-to-face communication
- › Adoption of a multi-channelled approach to information sharing;
- › Improved monitoring and evaluation mechanisms
- › Emergency support for emergency communication.

Despite this recognition, some key challenges still exist for aid agencies. As more agencies become involved in the communication sector the need for coordination increases, as does competition for already scarce funding.

Bellucci, A., Malizia, A., Diaz, P. & Aedo, I. (2010) *Framing the design space for novel crisis-related mashups: the eStoryS example*, Proceedings of the 7th International ISCRAM Conference, Seattle, USA.

Keywords: mashup, eStoryS, Flickr.

This paper presents a survey of current crisis-related mashups. The authors then extract the design dimensions to provide a conceptual framework to both understand the current systems, and to design the next generation of crisis mashups. Mashups refer to web-based applications that gather data from different sources into an integrated tool. Web mashups are useful for emergency responders as they can be created very quickly to collect and disseminate information.

The paper explores 16 crisis-related mashups to develop a general framework to guide designers of future web tools for emergency management, and discuss three dimensions of data: spatial, temporal and narrative. All the mashups analysed had the same temporal and spatial problems, with cluttered display screens. The authors recommend that a timeline combined with filtering tools could reduce clutter and act as a means of providing users with an interface to browse efficiently. This could be enhanced with search features to quickly retrieve information.

The authors suggest that the participatory nature of the web and social media needs to be taken into account when designing future mashup systems. The collaborative process (particularly tagging) allows users to describe and share resources. Future mashups can exploit this system by using tags as an additional source of information, as well as a means of classification and organisation. It is also suggested that using clustering algorithms for text serves to

extract knowledge about locations and explore spatial trends and geographic vulnerabilities within particular areas. Cluttering and categorisation can also act as a filter for data.

The authors explore three dimensions of functionality: collaborative, situational/contributory and visual. Collaboration refers to groups of users working together to generate new content and combine existing information. It is suggested that systems supporting disaster management should assist users in overcoming information overload by facilitating collaboration and filtering. The authors refer to situational designers as those developing applications for personal use to be shared, and situational contributors as those contributing within specific areas of interest to a broader mashup system. The authors suggest that mashups should take advantage of user participation in information generation and provide tools to support such practices – including reports and feeds. It is also noted that design features that allow users to send alerts to subscriber lists would assist in information dissemination and communication. Another issue with large inflows of information is visualisation, with better visualisation techniques being essential to ensuring information is displayed as efficiently as possible to users.

The authors identify eStoryS (emergency storyboard system) as an example of an application developed in line with the suggested design principles. eStoryS combines spatial-temporal tools, search features, recommendation tools, filtering tools, and storyboards to assist individuals in retrieving, creating and sharing information about disasters and/or emergencies. The mashup employs the Flickr platform to retrieve images from its database and makes use of location data to play images on a map using the Google Maps platform. Users are then able to search for a particular geographic area by entering data and coordinates. Users are also able to retrieve images taken within a specific time frame

or date. The system supports social navigation and recommendations based on users' past interactions with the system. The system employs user collaboration as an information filter and allows the formation of a storyboard of images.

Bird, D., Ling, M. & Haynes, K. (2012) 'Flooding Facebook – the use of social media during the Queensland and Victorian floods', *Australian Journal of Emergency Management*, vol. 27, no. 1, pp. 27-33.

Keywords: Facebook, Australia floods, accuracy, trust.

This paper explores the use of community initiated Facebook groups during the 2010/11 Queensland and Victorian Floods. It is suggested that these groups allowed for the publication of near real-time information from the general public and was an effective communications tool. During the floods, an online questionnaire was developed and advertised through Facebook community pages and contained questions on topics including:

- How/why people used Facebook during the floods
- Perception of the quality of information
- Use of other social media for flood information
- Perception of information on Facebook in terms of accuracy, timeliness, usefulness and trustworthiness.

There were 432 respondents to the questionnaire.

Results indicated that respondents used information during the worst phases of the floods either to gather information about their own community or to gain

information about the communities of their family/friends. In almost every instance, this information was communicated back to family/friends. 99 per cent of respondents found information useful and less than half reported conflicting or inaccurate information. Many respondents had used government, emergency services or media Facebook groups.

It was suggested that while ABC Emergency was the official communication vehicle during emergency situations, there was a time lag on the information delivered (due to verification requirements). However, Facebook group pages allowed real-time information from the general public. While these posts were subject to accuracy issues, administrators or other users often quickly verified them and any inaccurate information was quickly rectified.

Borges, M.R.S. & Vivacqua, A.S. (2012) 'Taking advantage of collective knowledge in emergency response systems', *Journal of Network and Computer Applications*, vol. 35, no. 1, pp. 189-198.

Keywords: collective intelligence, migration, preparedness, response, recovery.

This paper considers collective intelligence (CI), which is spontaneously generated information, within the domain of emergency response. The authors discuss the possibilities for the introduction of collective intelligence in disaster relief, concluding with examples of how this could be done.

Harnessing collective knowledge involves combining knowledge (behaviours, preferences, ideas) from a group of people to produce information. The authors consider Sustain's (2006) model of the four ways in which groups can elicit the information they need: (i) through statistical averages of independent contributors, (ii) through deliberation and reasoned exchange of facts and ideas, (iii) using a pricing system or market, and (iv) through voluntary contributions on the Internet. The authors also consider four phases of emergency management: mitigation, preparedness, response and recovery.

The paper then discusses the different approaches to CI across the four emergency phases: (i) mitigation, (ii) preparedness, (iii) response, and (iv) recovery. The paper concludes with presentation of a generic system framework for the introduction of CI in emergency management designed to enable the reception and contribution of information by populations and emergency services. The CI framework has the following characteristics:

- Interface – ideally both web and mobile to allow populations to provide data on their perceptions of the emergency
- Data collection – to receive and store raw data from populations for processing
- Data processing – to consolidate, classify and verify information before providing it to emergency services
- Decision support – to process data and combine it with data from external sources to enrich decision-making.

Bunce, S., Partridge, H. & Davis, K. (2012) 'Exploring information experience using social media during the 2011 Queensland Floods: a pilot study', *Australian Library Journal*, vol. 61, no. 1, pp. 34-45.

Keywords: Australia, floods, monitoring, awareness.

This paper presents findings from a pilot study on the information experiences of people using social media during the Brisbane River flooding in 2010/11. Data was collected through semi-structured interviews. Results revealed four different categories describing participant experiences:

- Category 1: Monitoring information – use of social media networks for the purpose of staying informed
- Category 2: Community and communication – communities were reached through established social networking groups or through traditional media, who sourced information from response agency social media platforms
- Category 3: Affirmation – information seeking for affirmation or assurance (e.g. safety of family/friends/property) or use of social media platforms to provide assurance of own safety to family and friends
- Category 4: Awareness – development or expansion of awareness of an event (e.g. to understand how flooding had affected different areas or ability to attend work).

Results also indicated that the flooding event was viewed by participants as having three distinct phases: (i) pre-flooding – during this time Category 2 and 4 information was most useful; (ii) flooding –

Category 3 and 1 information most useful; and (3) post-flooding – Category 2 and 3 information was most useful.

Cameron, M.A., Power, R., Robinson, B. & Yin, J. (2012) *Emergency Situation Awareness from Twitter for crisis management, 21st Annual Conference on World Wide Web Companion*, pp. 695-698.

Keywords: emergency, situation, awareness, Twitter.

This paper explores ongoing work with the Australian Government to detect, assess and summarise messages of interest for crisis coordination published on Twitter. The paper presents a description of the Emergency Situation Awareness – Automated Web Text Mining (ESA-AWTM) and how it may be used in emergency management scenarios. The paper explores the problem that while social media provides a rich source of information about an emergency, agency officers have a limited amount of time to scan and assess if the information is worthy of deeper analysis. As a result, tools are needed to address the following issues (p. 696):

- Detect unexpected or unusual incidents, possibly ahead of official communications
- Condense and summarise messages about an incident maintaining awareness of aggregated content without having to read individual messages
- Classify and review high-value messages during an incident (e.g. messages describing infrastructure damage or cries for help); understand the impact of an incident on people and infrastructure

- Identify, track, and manage issues within an incident as they arise, develop, and conclude; pro-actively identify and manage issues that may last for hours, days or weeks
- Perform forensic analysis of events by analysing social media content from before, during, and after an incident.

The ESA-AWTM platform is designed to capture tweets from the Twitter search engine and assemble them into capture messages, which are fed into the ESA-AWTM infrastructure and processed through a Java Message Service browser which retrieves and displays information to a watch officer. The ESA-AWTM addresses the five needs outlined above by:

- A burst detection service which provides watch officers with basic situation awareness at a perception level (based on a statistical model of keyword occurrences)
- Condensing and summarising messages provides watch officers with basic perception level situation awareness (the output of this is cluster summaries with font size and colour used to indicate number of tweets per cluster)
- A system of automatic classification of tweets trained to identify particular strains of tweets and provide watch officers with a more targeted view of the information
- The development of an algorithm to condense or merge message clusters with similar content or split them with dissimilar content (this process is ongoing)
- Capture and storage infrastructure to enable historical analysis of tweets.

These tools have been deployed for trial by the Media and Crisis Communication team within the Strategic Communication Branch of the Australian Government.

Chan, J.C. (2012) *The Role of Social Media in Crisis Preparedness, Response and Recovery*, Singapore: RAHS Programme Office (RPO).

Keywords: USA, disaster planning, response, social media.

This paper explores categories of social media tools in an attempt to understand how they can be used for crisis management. The paper explores four main social media functions: (i) information dissemination, (ii) disaster planning and training, (iii) collaborative problem solving and decision-making, and (iv) information gathering. These functions are then mapped onto the three phases of crisis management: (i) preparedness, (ii) response, and (iii) recovery (generalised to past, present and future).

This is illustrated by case studies of international organisations and governments using social media for crisis management. These include the New York City's Office of Emergency Management's use of Sahana software to manage its shelters during a crisis; the Dutch Government's website (www.crisis.nl) as a portal for information dissemination during times of emergency; Ushahidi software to enable user-generated reports during an emergency; and SensePlace 2, an application that integrates multiple text sources onto a map.

This paper proposes a framework to enhance government use of social media. This framework encompasses a whole-of-government mandate for managing crises using social media, as well as establishing a set of strategic guidelines for the use of social media tools. Furthermore, three capabilities are identified: (i) early detection mechanisms; (ii) optimised task handling to support information dissemination, disaster planning and training, collaborative problem solving and decision-making, as well as information gathering;

and (iii) an integrated public alert and feedback system. Finally the author proposes the use of appropriate indicators to monitor the application of social media tools to help guide measurement and evaluation practices.

Coyle, D. & Meier, P. (2009) *New Technologies in Emergencies and Conflict: The Role of Information and Social Networks*, UN Foundation-Vodafone Foundation Partnership, Washington DC & London.

Keywords: disasters, early warning, capacity development.

This report explores the use of communication technologies during disasters in recent years, concluding that such technology has had a positive role, but has yet to reach its full potential. The report explores the potential for technology in preparation for a disaster, in disaster-response and in rebuilding. The report outlines both the potential of new technologies to increase the speed, efficiency and accessibility of information dissemination and communication, and the risks associated with the veracity and accuracy of information disseminated through these technologies. The report also explores the need for reliable information to prepare for an emergency and the need for effective early warning systems (EWS). The authors argue that there is a need for further standardisation of communications in emergency situations and recommend the development of a global standard for cell broadcast technology, as demonstrated by events such as the 2004 Indian Ocean Tsunami. It is also argued that there is a need to develop standards that are applicable to both existing and future systems for alerts and early warning messages, as well as the need for interoperability between public networks and emergency response networks. The authors

argue that any EWS should be people-centred and incorporate priority access for emergency services personnel to communications.

The authors argue that disaster/emergency preparedness depends on long-term education and planning to ensure that people affected respond appropriately. It is noted that platforms such as Ushahidi have the potential to improve awareness as an emergency unfolds by crowdsourcing information, but that such new technologies also heighten the tension between information sharing and reliability of data. The report argues that NGOs and humanitarian organisations could make more effective use of new media to reach their target communities and meet their information needs at the onset of an emergency. It is also necessary to ensure that the international humanitarian community themselves has the ability to act on the information and data they are receiving from new emergency response systems. The authors acknowledge that there is a significant trade-off between the authority and accuracy of information and the timeline of its distribution, with the issues of verification and validation still a significant concern.

At the height of an emergency, there is an overwhelming need for rapid, high-quality information delivered to those affected, and effective coordination and information dissemination between relief organisations. The authors argue that the effective collection and use of information does not solely depend on the technology used, instead it is the affected communities and people who have the most detailed and immediate information needed by humanitarian agencies to deliver an effective response. In this sense, it is recommended that the humanitarian community develop techniques and/or tools for communicating effectively with affected communities. In order to be effective, information flows need to be two-way and validated for reliability.

Rebuilding after an emergency depends on the quality of infrastructure available, and the need for access to information does not end when the immediate threat of a crisis/emergency subsides. It is suggested that the technology and innovation used at the earlier stages of a response can and should be leveraged to serve a longer-term purpose. To conclude, the authors recommend the removal of regulatory barriers and extension of the regulatory framework for emergency response to incorporate new and emerging technologies, as well as putting more resources into local preparedness to ensure the most effective leveraging of new media and/or crowdsourcing technologies.

Dabner, N. (2012) “‘Breaking Ground’ in the use of social media: A case study of a university earthquake response to inform educational design with Facebook’, *Internet and Higher Education*, vol. 15, no. 1, pp. 69-78.

Keywords: New Zealand, Facebook, earthquake, response.

This case study paper demonstrates how the University of Canterbury (UC) responded to the 2010 New Zealand earthquake with social media platforms acting as a prominent source of support. The findings of this study indicate that social media can effectively support information sharing, communication and collaboration. The paper explores UC’s communication spaces with students and how these were utilised during the earthquake. The creation of a UC Quake Recovery site on Facebook provided a valuable channel of communication, with participants using the discussion feature to ask questions, express words of encouragement, offer support or advice, inquire about campus/study matters, provide safety advice and use humour to lighten the situation. On this

site, peak communication times centred on the announcement of the reopening of UC, suggestions for a student clean-up effort, and during aftershocks. The author observes that students have positive associations with social media, having incorporated them into their daily lives. However, it is suggested that there often needs to be an acute event occur before they are integrated within institutional communications strategies.

Hattotuwa, S. & Stauffacher, D. (2010) *Haiti and Beyond: Getting it Right in Crisis Information Management*, ICT for Peace Foundation, Geneva.

Keywords: Haiti, earthquake, SMS, crisis management.

This paper focuses on the global effort to leverage web and mobile technologies alongside social networking platforms in response to the Haiti earthquake in 2010. The paper explores the various technological platforms that were deployed in the response, the progress made against previous response/relief efforts, as well as the challenges and lessons learnt going forward. Ushahidi was the first platform to be deployed in response to the disaster and used crowdsourcing technologies to ascertain the needs of both victims and relief agencies. Alongside this, the Sahana platform was also deployed to plot the location of medical and other infrastructure. A partnership between Internews and the Thomson Reuters Foundation deployed an Emergency Information Service (EIS) to help agencies communicate with communities through local radio stations and SMS feedback. OCHA managed UN One Response as a vital portal for situation reports and vital contact information, and the ICT for Peace Foundation developed and maintained a wiki with a link to over 120 sources and other vital background information.

The authors note that the Haiti response saw unprecedented use of SMS by agencies to secure donations to the relief effort, particularly across the United States. Furthermore, maps that were created by CrisisCommons using OpenStreetMap software represented the first successful attempt to map a before and after picture of infrastructure to identify damaged areas and potential barriers to aid delivery. Another technological breakthrough was the distribution of an SMS hotline number allowing individuals to message in with their location and assistance required. This was dubbed 'Project 4636' after the hotline number. However, despite this significant progress, there were still a number of challenges to the use of technological platforms. Most importantly, the authors note that ICTs have a tendency to operate as islands, serving to impede rather than enhance the relief effort. During the Haiti response there were numerous systems for registering missing persons, which led to unnecessary amounts of duplication and fragmentation. Furthermore, there was a lack of a formal complaints mechanism and a lack of accountability, which resulted in coordination challenges.

While the Haiti response represented a turning point for the use of technological platforms in disaster response, the authors note that some of the lessons learnt from events such as the 2004 Indian Ocean Tsunami have yet to be realised and/or implemented. The paper concludes by offering some recommendations to strengthen future crisis information management. These include (p. 2):

- Developing easily accessible datasets with essential information shared across agencies
- Developing ICTs that work better in a traumatic environment
- Improving interoperability across all systems between UN agencies and other platforms

- Using home-grown/local technology to help communities develop their own capacity and capability for early warning
- Improving cooperation between government and NGOs based on standard operating procedures
- Acknowledging the key role of global and local businesses for generating and sustaining financial inflows
- Developing a comprehensive crisis information management preparedness toolbox.

Heinzelman, J. & Waters, C. (2010) *Crowdsourcing Crisis Information in Disaster-Affected Haiti*, United States Institute of Peace, Washington DC.

Keywords: Haiti, earthquake, Ushahidi, crisis-mapping.

This report examines the role of 'Ushahidi' – a crisis-mapping platform – in the disaster relief efforts after the 2010 Haiti earthquake. Ushahidi provided the international community with access to intelligence collected from the Haitian population via text message and social media (assisting responders to effectively target resources) (p. 1). The report notes that the traditional disaster response system relied on by Haiti relief workers focused on information sharing but was limited in a number of ways. It:

- Struggled to utilise local knowledge
- Struggled to engage the Haitian population in decision-making process
- Failed to gather local information to verify conflicting security reports (directly affecting aid delivery) (pp. 3-4).

Ushahidi was first developed in Kenya as a means of capturing, organising and sharing critical information (sourced from social media and SMS text messages) in regards to post-election violence. This software is now used for a variety of purposes:- depletion of medical supplies, reporting human rights violations, tracking wildlife, building networks of peace actors, empowering disenfranchised communities through citizen journalism, monitoring elections, and so on.

The Ushahidi software was deployed in Haiti for the purpose of crisis-mapping, which was conducted by Ushahidi staff, as well as volunteers globally. Information was gathered from social media sources and traditional media sources and relevant information was attached with GPS coordinates through Google Earth and Open Street Map before being placed on haiti.ushahidi.com for use by agencies and the public. Local populations were encouraged (through social networks) to submit reports via email, web or phone (crucial given the large percentage of the population with access to SMS services). These reports and geographic information were available to anyone with an Internet connection (on the aforementioned website) and was used by responders on the ground to determine how and where to target resources. Ushahidi allowed for reports about trapped persons, medical emergencies, and specific needs to be received and plotted on maps. The most common reports received concerned: vital supply lines, services available, emergency, public health, water issues, infrastructure damage, security threats and natural hazards.

The report concludes that the Ushahidi-Haiti project demonstrated the potential of crowdsourcing maps for targeted disaster response, as well as providing a useful foundation for the international community to advance their use of new communication technologies in future emergencies (p. 14). Several recommendations are noted (p. 14):

- Crisis mapping efforts should leverage local knowledge and capacity by working in-country with community organisations as both providers and consumers of data
- Emergency response organisations should integrate mobile phone enabled information gathering and communication to build trusted networks of verified reporters in the case of emergency
- Mapping does not need to wait until an emergency has occurred – geographic information should be consolidated and kept relevant to lay the foundation for disaster related services during emergencies
- Analytic tools should be developed to integrate crisis-mapping to automatically detect early warning signs of conflict.

Hui, C., Tyshchuk, Y., William W.A., Magdon-Ismael, M. & Goldberg, M. (2012) *Information cascades in social media in response to a crisis: A preliminary model and a case study*, Proceedings of the 21st International Conference Companion on World Wide Web, pp. 653-656.

Keywords: Twitter, retweet, information cascades.

This paper examines information cascades on Twitter in response to a crisis event (the event chosen for this analysis is an armed robbery). The paper aims to identify the types of information requested/shared in a crisis situation, show how messages are spread among Twitter users, and outline what patterns have to say about information flows and users.

The authors examine how information flows through a network and how Twitter users process and relay information. It is suggested that Twitter users may have three states:

- › Uninformed – user is susceptible to new information and may become exposed to information when monitoring their Twitter feed
- › Disbelieved – user may tweet and is not affected by the information in the tweet (information is not relevant)
- › Undecided/believed – user may see a tweet and is influenced or finds it interesting.

If a user is influenced by a tweet they will most likely retweet the message or direct the message to other users.

The authors explore information cascades to understand how messages are spread among Twitter users. It is determined that 'retweet' activity was most frequent during time periods between warnings (particular second and third warnings) where large numbers of Twitter users were retweeting and propagating information. It was determined that retweet activity decreased after an 'all clear' message was given and only small chains of retweets were recorded. The information that was retweeted the most was information perceived to be from reliable sources or which was identified as being of most value to users. The authors identify local media sources and key community sources as promoting wide reaching information cascades. The paper concludes that emergency managers can use Twitter to facilitate the spread of accurate information but also to impede the flow of inaccurate/improper messages.

Jennex, M.E. (2012) *Social Media – Truly Viable For Crisis Response?*, Proceedings of the 9th International ISCRAM Conference, Vancouver, Canada.

Keywords: USA, Facebook, infrastructure, back up.

This paper explores a study conducted on the availability of social media during the 2011 Great San Diego/Southwest Blackout in an attempt to answer the question: is social media a viable option for crisis response? The study used an exploratory survey to collect opinions/experiences related to the performance of social media during the blackout.

Survey results indicated that few respondents used Facebook to update their status, a finding that was surprising given the large numbers of Facebook users. The author suggests that the low numbers of respondents using Facebook and Twitter is a reflection of those who relied on home Internet and/or computers to access the platforms, rather than those who used an Internet enabled phone, as home Internet users had no connection. Over 70 per cent of respondents reported some form of loss of service while attempting to access social media. It is noted that during the crisis there were frequent 'server busy' messages displayed, perhaps as a result of the numbers of people attempting to contact and coordinate via social media. It is noted that many respondents had not expected the blackout to affect their phones or social media, given the cell tower infrastructure's ability to operate on battery backups. The author suggests that these battery backups failed to perform as expected.

It is concluded that the blackout event can be considered a backup battery test. The author suggests that when judged from a crisis response point of view, the blackout test failed. Given the duration of the blackout (less than 24 hours), it is suggested that in order for a service to be considered for crisis response support it should be available for a sufficient period of time to allow for first responders to either preserve it or implement backup systems. Less than 24 hours of time is insufficient to ensure this. Another conclusion drawn is that social media providers did not expect that their services would be used for crisis response. This also creates a problem for crisis responders as users are more inclined to use systems they are familiar with and in doing so will continue to use social media platforms to do innovative things that they were not designed for. The author notes that, while the functionality of social media is useful, the majority of social media availability is not sufficient to warrant including social media as an operational response system.

Krukinen, E., Sullivan, H., Häkkinen, M. & Luttamus, M. (2010) *Optimizing Mobile Social Media Interfaces for Rapid Internal Communication by Emergency Services*, Proceedings of the 7th International ISCRAM Conference, Seattle, USA.

Keywords: Twitter, emergency services, usability.

This paper examines methods to improve the efficiency and usability of mobile devices and social media use by emergency services personnel. It is noted that while some authorities have harnessed the value of social media tools to disseminate official information, security concerns mean that emergency

services have yet to harness the operational use of such platforms.

The authors argue that a Twitter-style model for police activity reports can provide a means for enhanced situational awareness. The authors propose a prototype model known as SUMO (Situational Updates from Mobile Officers) as a fusion between professional monitoring technologies and social media feeds. SUMO enables users to submit status updates from mobile devices, which are then captured as part of an organisation's timeline. This would enable senior officers to monitor a complete timeline for all officers or select specific officers, locations or events to monitor. The SUMO prototype operates over secured radio and/or intranet networks.

The authors note that the key to SUMO's design lies in its ability to gather information from existing vehicle sensors to determine data such as location, speed, pursuit, as well as imagery from vehicles' cameras and audio. This is combined with a keypad and virtual symbolic keypad for the entry of standard information. It is argued that this feature limits the distractibility of the technology and minimises errors.

Martin, N.C., Martin-Shields, C. & Dorn, A.W. (2011) 'Smartphones for Smart Peacekeeping', *The Mark News*, available online http://themarknews.com/articles/5470-smartphones-for-smart-peacekeeping/#.uxj7N44Wy_u

Keywords: smartphones, peacekeeping, monitoring, violence.

This paper argues that the UN is behind in exploiting the information technology revolution. The staggering growth of cell phone usage across the globe and the acceleration of evolution of hardware/software has increased the potential

for humanitarian agencies to utilise technology. The authors argue that the UN Department of Peacekeeping Operations (DPKO) has not harnessed this phenomenon. Some examples are cited from other UN agencies including SMS and image transmission to coordinate distribution of aid in the field and communicate basic information about outbreaks or violence.

The authors argue that 'smart phones' with camera, video, recording, GPS, email and Internet tools and various 'apps' should be more comprehensively adopted by UN agencies. It is argued that this would allow peacekeepers to visualise the trajectory of conflict in real-time and share that information with field workers. This would also allow reports of violence to be distributed through a web-based platform via either email or SMS and would then allow workers to gain validation of these reports. After such reports have been verified they are able to be plotted using Google Maps or Google Earth, enabling alerts to be sent to peacekeepers in threatened areas.

The paper suggests that mobile technology could improve first responders' capacity by utilising a system of receiving SMS from local users. This would be particularly beneficial for identifying outbreaks of violence, disease and popular movements, particularly once they have been analysed (cleaned) and made available to UN officers and local government leaders. The paper concludes that mobile technology is not a replacement for core peacekeeping operations, but having a real-time system for civilians to report violence and deploy resources could dramatically increase efficiency.

McClendon, S. & Robinson, A.C. (2012) *Leveraging Geospatially-Oriented Social Media Communications in Disaster Response, Proceedings of the 9th International ISCRAM Conference, Vancouver, Canada.*

Keywords: crisis, SMS, Twitter, hashtags, syntax.

This paper compares the capabilities for two popular systems used to collect and visualise social media communications for crisis management – Project Epic's Tweak the Tweet (TtT) and Ushahidi. Both these platforms use SMS and Twitter messages and the location information associated with both these platforms. The authors compare how data was collected, processed and geo-located by the two systems. TtT, developed in 2009, asks users to tweet using a crisis specific micro-syntax based on main hashtags used in any crisis situation to indicate the 'who, what and where' content of messages, i.e. #floods. This is designed to enable the efficient processing and organisation of tweets. Tweets using the micro-syntax are identified and stored in a database, which is then categorised and displayed on a simple map using Google Maps. The Ushahidi platform combines interactive mapping with the ability to capture data streams from Twitter and SMS.

Both systems experienced challenges with filtering, managing and analysing large volumes of social media communications. For TtT, the syntax was not widely adopted by citizens and responders to crises, but was adopted by volunteers who translated information from multiple sources using the syntax and then tweeted it out to their followers (including a number of relief agencies). Another challenge to using social media data during a crisis is extracting essential location information. Any location information referenced in a tweet or SMS needs to be extracted and geocoded to obtain coordinates. The

Ushahidi platform does not contain a mechanism for automatic geocoding of location information. Instead, the platform extracts geospatial information from social media feeds where it exists and volunteers translated location information from SMS. TtT's software platform extracts geospatial information using the Twitter API (application programming interface, which allows it to integrate and interact with other applications) where it exists. The software also filters for location tags as part of the TtT syntax, which were then coded using GeoKit.

The paper compares Ushahidi and TtT across three dimensions:

- What types of data and variables are captured by each effort
- The interactive mapping tools that each platform provides
- How each platform has resulted in tangible actions by responders.

Both platforms are aesthetically similar in their mapping interface, with neither platform supporting geospatial analysis capabilities. Ushahidi, however, does provide alert tools to enable users to 'listen' to reports from a particular geographic or thematic area.

The authors conclude with key design considerations for future efforts to leverage geospatially oriented social media in crises. This includes ensuring effective mechanisms for dissemination and sharing information between responders and crisis managers. Similarly, it is necessary to extract location data from social media, particularly geocoding and disambiguation of descriptions of place. The authors recommend that in future, social media data capturing platforms should be able to recognise patterns that reference particular regions, landforms and directions in relation to specific locations. It is noted that both TtT and Ushahidi have only tackled simple location related problems and,

in doing so, provided only rudimentary situational awareness and mapping capabilities to visualise data (p. 10).

Meier, P. & Leaning, J. (2009) Applying Technologies to Crisis Mapping and Early Warning in Humanitarian Settings, Harvard Humanitarian Initiative, Cambridge.

Keywords: crisis, local, user-friendly, SMS, ICT access.

This paper analyses the current use and changing role of ICTs in conflict early warning, crisis mapping and humanitarian response. The paper uses the terminology 'big world' to refer to top-down, Western institutions, and 'small world' to refer to a local community perspective. The authors discuss six critical information pathways including pathways between 'big world' headquarters and field offices, among 'big world' field offices, between 'big world' field offices and 'small world' organisations to affected populations, among 'small world' organisations and affected populations, and between or within 'small world' affected populations.

The two main challenges of using ICTs in crisis zones are access and security – both field security and data security. The authors present a number of possible ICT solutions for both the 'big world' and 'small world' and the strengths and weaknesses of these technologies. For 'big world' agencies, mobile forms of ICTs have tremendous potential. One key and frequently used mobile technology is the walkie-talkie. Walkie-talkies are readily available and increasingly sophisticated, but have a limited range and have the potential for confiscation in the field. Radio technologies offer a secure form of countrywide communication, they are flexible and they interact well with other communications mediums. The Internet is a user-friendly technology

but is not readily available and is subject to censorship. Where Internet is readily available, Skype has the potential to facilitate a secure line of communication.

Finally, satellite technologies enable agencies and rescue workers to set up communications in minutes. For the 'small world', innovative technologies can provide the greatest potential. In many communities with limited access to electricity, portable solar and wind-up chargers can be used to facilitate mobile phone and radio use. The Internet and blogs can facilitate the distribution of large volumes of timely information. Radios are capable of operating on multiple frequencies, although independent radio stations are often limited. SMS can be used, in conjunction with high rates of mobile phone ownership, to facilitate mass communication. Often, it can be difficult to communicate politically sensitive information due to government surveillance. Flash drives with innovative features can enable data exchange directly without the need for a computer. The term 'sneakernet' is used to describe the transfer of electronic information by carrying removable media from one machine to another.

Field and data insecurity such as the tracing of mobile phones can make communication difficult. As a result, the authors recommend techniques such as removing the battery from mobile phones when they are not in use and using multiple SIM cards. There are also tools such as 'cryptoSMS' to facilitate free and open source tools to encrypt text messages and facilitate secure SMS communication. The authors conclude that 'big world' agencies are currently reliant on expensive new technology that is easily confiscated by customs officials in the field. The 'small world' can benefit from the use of 'technologies of liberation' developed by activists, but these peer-to-peer communication tactics don't always facilitate easy communication back to 'big world' partners. As a result, it is necessary to focus

on technological design to allow societies to bridge the gap between 'big world' and 'small world'.

Mersham, G. (2010) 'Social media and public information management: the September 2009 tsunami threat to New Zealand', *Media International Australia Incorporating Culture and Policy*, no. 137, pp. 130-143.

Keywords: New Zealand, emergency, communication back channels, Facebook.

This article explores how social media act as informal 'back channels' of communication by analysing and commenting on official emergency management messages as they are disseminated. This is explored through the case of the New Zealand Tsunami warning in 2009. Traditionally, the communication of emergency warnings had been based on unidirectional information dissemination from officials to the public via broadcast media. However, technological and social developments have meant that the public no longer relies on a single source of official information and as such, members of the public leverage their own social networks to find information outside this official response to make critical decisions about emergency situations.

The article demonstrates that official messages in the early stages of a national warning are characterised by an 'information and guidance lag' period (in comparison to what is being confirmed across social media sites) created by the institutionalised requirements of scientific assessment and validation in accordance with organisational protocols. It is suggested that, despite concerns by officials regarding the legitimacy of information shared through social media, such technologies are gaining prominence across disaster areas. Despite this acknowledgment, during local

and national disaster management planning and policy implementation the focus is almost entirely on the official response through traditional media. This places the public peer communication as an informal 'backchannel' activity that does not garner full legitimacy.

Muller, M. & Chua, S. (2012) *Brainstorming for Japan: Rapid distributed global collaboration for disaster response*, Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems, pp. 2727-2730.

Keywords: Japan, earthquake, responding, recovering, preventing, preparing.

This article presents a case study of rapid distribution brainstorming from 23 countries within a three-day period (conducted across staff of a multinational corporation during the 2011 Japan earthquake). IBM provided support to Japan after the earthquake and after several weeks of intense relief work, began discussing longer-term proposals. It was decided to convene a voluntary brainstorming activity for employees (Japan Forum). Using social media products, an online community was created for the purposes of brainstorming. The discussion topics considered included: (i) increasing reliance of Japan to future problems, (ii) leveraging technology in rebuilding, (iii) continuity planning, (iv) addressing public perceptions, (v) engaging global support, (vi) managing energy consumption, and (vii) improving health and food supply chains. 1,250 people from a variety of countries registered for the forum.

Factors that contributed to the success of the brainstorming included: (i) the fact that social media could be easily appropriated, and (ii) employee familiarity with large-scale brainstorming. Results

from the brainstorming were categorised across the four main phases of emergency management: (i) responding, (ii) recovering, (iii) preventing, and (iv) preparing. Brainstorming responses included:

- Responding – such as expanding on modelling tools, monitoring and modelling disease outbreaks, or managing electronic health care records
- Recovering – such as organising power usage across multiple levels, improve power efficiencies in data centres
- Preventing – such as minimisation of damage from earthquake events
- Preparing – the study of best practice.

The article concludes by suggesting that this kind of limited duration, low-commitment idea generation is a distinct phase of online collaboration, distinguished from others by its brief timeframe, brainstorming atmosphere and low cost of contributions.

Muralidharan, S., Rasmussen, L., Patterson, D. & Shin, J. (2011) 'Hope for Haiti: An analysis of Facebook and Twitter usage during the earthquake relief efforts', *Public Relations Review*, vol. 37, no. 2, pp. 175-177.

Keywords: Haiti, earthquake, Facebook, Twitter.

This paper applies a framing theory to the analysis of Facebook posts and tweets sent by NGOs and media organisations during the Haiti earthquake. The paper examines the framing of the 2010 Haiti earthquake on Facebook and Twitter during two weeks following the earthquake as well as the emotional angles, thematic content and influence on the relief effort.

Data was collected through a content analysis on Facebook posts and Twitter tweets by 41 NGOs and eight media organisations from 12 January 2010 – 26 January 2010. The results were analysed according to the following research questions: (i) What is the dominant post and tweet type of NGOs and media organisations? (ii) What types of relationship development strategies are NGOs and media organisations using on social media? (iii) What type of emotion is commonly found in the posts and tweets of NGOs and media organisations? (iv) Are the posts and tweets of NGOs and media organisations episodic or thematic in nature? (v) What is the dominant message frame used by NGOs and media organisations?

The paper found that the use of social media on earthquake and relief efforts gradually decreased after reaching a saturation point. Results indicated that NGOs and media organisations used information and dissemination practices effectively but failed to capitalise on the two-way nature of social media communication. The paper discovered a difference between the NGO and media sectors in terms of social media use – NGOs used more positive emotions (such as morality and responsibility) to encourage relief efforts, while media organisations used negative emotions to gain attention and encourage readership.

NetHope (2006) Disaster Relief, NetHope, Fairfax, USA.

Keywords: disaster, ICT infrastructure, response, monitoring, reconstruction.

This whitepaper explores recommendations for ICT deployments in disaster zones, based on NetHope's experience and that of its members. These recommendations are summarised into a set of guidelines for member agencies. The document notes that within hours of the disaster striking,

technology is needed for relief workers to survey and assess damage as well as transmit images and security information to offices. In light of this, this initial stage of disaster response is characterised by highly individualised mobile technologies, and temporary computing, communications and power solutions. Within two weeks of a disaster striking it is necessary for relief workers to monitor the disaster, assess victim needs and manage the deployment of relief material and funds. This stage of the disaster response is characterised by the movement of small groups with transportable computing, communications and power solutions. The more long-term disaster response sees relief agencies providing resources for reconstruction, counselling, family reunification, and water and food distribution. This final stage is characterised by large groups in more fixed offices with more stable technology.

It is noted that for the last two stages of disaster response, there is a need for higher speed communications at a controlled rate. In these instances, a fixed satellite or microwave-based connectivity option is required. These stages also require software applications to compliment voice and data connectivity.

Paquette, S. & Yates, D. (2011) 'Emergency knowledge management and social media technologies: A case study of the 2010 Haitian earthquake', International Journal of Information Management, vol. 31, no. 1, pp. 6-13.

Keywords: Haiti, earthquake, wiki, SharePoint.

This article explores the US response to the 2010 Haiti earthquake in terms of knowledge management systems (KMS). This response represents the first time US government agencies had employed social

media technologies as the main knowledge sharing mechanisms. This article explores how these social media technologies were used, what influences they had for knowledge sharing and decision-making, and how knowledge was maintained in these systems. The authors undertook participatory action research for two weeks within the US Air Force Chief of Staff's Crisis Action Team (AFCAT) – a body designed to ensure that aid was flowing to Haiti as needed, that the military was properly resourced, and that leadership had the most accurate information possible to enable decision-making.

AFCAT used a variety of 'social media software' during the relief effort:

- Microsoft SharePoint: allowed for the creation of web pages by team members and contribution of comments on these pages. This supported enhanced knowledge sharing between staff
- Wiki pages: created by various agencies involved in the response, oriented toward knowledge sharing within the relief effort as a whole (in contrast to merely among staff as above).

Both these technologies changed how knowledge was acquired, shared, applied and maintained in comparison to the largely linear and face-to-face nature of information sharing in past relief efforts (p. 10). This was done in a number of ways:

- Increasing knowledge reuse within a staff
- Eliminating the reliance on formal liaison structures between staff
- Eliminating duplication of relief effort (p. 10).

This allowed each staff member to have complete visibility in regards to how knowledge was shared by colleagues (rather than relying on knowledge obtained during formal briefings). Social media enabled staff to log onto a common platform to

search directly for information needed (rather than relying on formal liaison methods to ascertain which individuals held which pieces of information). It was also discovered that decision-makers found the visual presentation of information a particularly effective format. Having demonstrated the influence that social media had on the information sharing of individuals within an organisation, the authors then examined this further through applications of Carlile's (2004) 3-T Framework (transfer – translate – transform). Under this framework, information is utilised by organisations to span three boundaries:

- Syntactic: where parties develop a shared syntax/language to communicate
- Semantic: where differing interpretations of knowledge are created in contrasting interpretations (the absence of mutual understanding)
- Pragmatic: where knowledge is directed towards a specific practice, which requires common knowledge to be shared.

The authors argue that, in the Haiti earthquake, the social media enabled knowledge management system 'spanned syntactic boundaries by allowing knowledge to be transferred from one domain to another' (brokering function between different departments/agencies) (p. 11). The SharePoint system was able to span semantic boundaries through translating knowledge and converting it to a form that was understandable across organisational boundaries (reduced reliance on formal liaison structures) (p. 11). Finally, pragmatic boundaries were spanned through social media's ability to transform knowledge.

Patrick, J. (2011) 'Haiti Earthquake response: Emerging Evaluation Lessons', *Evaluation Insights*, no. 1, pp. 1-14.

Keywords: Haiti, earthquake, delay, collating, information.

This paper represents a guide for humanitarian policy makers, distilling findings from a selection of evaluations into the Haiti earthquake response (2010). The report is organised around the evaluation criteria of the Development Assistance Committee (DAC): (i) relevance and appropriateness, (ii) connectedness, (iii) coherence, (iv) coverage, and (v) efficiency and effectiveness. The report highlights emerging lessons and presents findings. It notes that 'novel information communication technology was used in the Haiti earthquake response including social media, crowdsourcing and user-generated content of assessments including mapping. However, serious delays in collating and sharing information on humanitarian agency activities were attributed to 'poor prioritisation of information sharing' (p. 9).

Potts, L., Seitzinger, J., Jones, D. & Harrison, A. (2011) *Tweeting disaster: Hashtag constructions and collisions*, Proceedings of the 29th ACM international conference on Design of communication, pp. 235-240.

Keywords: Twitter, hashtags, information, management.

This paper explores the issues surrounding the use of hashtags by Twitter users who are attempting to exchange information about recent natural disasters. This paper explores the inconsistent nature of hashtag formats and spelling, arguing for a system to

help bridge this through the creation of participant-centred data streams that can collect and re-route these conversations.

Concerns with hashtags include: (i) inconsistent cataloguing of hashtags (e.g. confusion between hashtags 'bomb', 'bombs' and 'bombing' during the 2005 London Bombings); (ii) hashtag's ability to draw large audiences has, in many instances, led to exploitation by 'spammers', advertising websites or companies (evidenced by the tweeting during the Iranian 2009 election); (iii) hashtags relating to the same event proliferate, creating potential problems in maintaining sustainable communication contexts. This raises concerns for finding relevant and necessary information; (iv) the volume of content on a particular hashtag timeline can be overwhelming; and (v) search features that do not support useful return of results, i.e. in reverse chronological form.

The authors explore tweets from the 2010/2011 New Zealand earthquakes and the 2011 Japan earthquake and tsunami and identify 'a proliferation of hashtags that did not cross-pollinate and lack a usability in the tools necessary for managing massive amounts of streaming information for participants who need it' (p. 237). The authors argue that Twitter use during these disasters was ineffective, due to two factors:

- Human factor – inexperience on the part of Twitter participants with the hashtag feature, combined with a lack of experience with the ways hashtags can be used by different Twitter communities. This resulted in proliferation of multiple hashtags.
- Technical factor – inadequate system and tools to easily detect patterns in tweets and information contained within. Volume and speed of tweets created significant hurdles for participants trying to manage streams of information.

The paper concludes with a call to action, arguing for leverage within social media (particularly in response to disasters) to enable people to respond to events and direct critical information in the ways they see necessary. In order to do this, it is necessary to present useful and usable information management and data visualisation options for participants.

Prutsalis, M., Bitner, D., Bodduluri, P., Boon, F., de Silva, C., König, D. & Treadgold, G. (2010) *The Sahana Software Foundation Response to the Haiti Earthquake: A New Standard for Free and Open Source Disaster Data Management Systems, Proceedings of the 7th International ISCRAM Conference, Seattle, USA.*

Keywords: Haiti, earthquake, Sahana, open software.

This paper explores the central role played by the Sahana Software Foundation and their free, open source software in the Haiti earthquake response. The Sahana Haiti 2010 Earthquake Disaster Response Portal provided a number of functions to support the need of responders. These include:

- An organisational registry provided a searchable database of organisations responding to the disaster, the sector in which they were providing services, office locations, activities and contact details
- A request management system through which requests for assistance were made visible to relief organisations working on the ground. The Sahana Foundation worked with a number of partners to translate and process SMS assistance requests from citizens

- A hospital management system which enabled volunteers to geo-locate 100 hospitals with no previously known coordinates and add them to the registry to manage medical capacity and needs assessment
- A food cluster/request portal developed at the request of the World Food Programme to coordinate food aid distribution plans. The portal enabled relief agencies to identify their location and provide details of their planned programs and beneficiaries and in doing so identify the types and quantities of food aid needed
- A persons registry as a place where names, addresses and contact information is stored for individuals
- A disaster victim identification registry to manage the tracking and identification of the deceased
- A shelter registry to identify locations of temporary shelter and/or accommodation
- Situation mapping throughout the site to geo-locate and reference all data within the Sahana system
- Translation of incoming data.

The authors argue that the level of collaboration and coordination that took place between the Sahana community and other organisations resulted in a new model for Sahana deployments, namely self-deployment.

Reuter, C., Marx, A. & Pipek, V. (2011) *Social Software as an Infrastructure for Crisis Management – a Case Study About Current Practice and Potential Usage*, Proceedings of the 8th International ISCRAM Conference, Lisbon, Portugal.

Keywords: crisis, management, Twitter, Facebook, tagging.

This paper explores how actors in crisis management and affected communities can communicate and/or collaborate through the use of social software. For this paper, social software is defined as a web-based application that supports interaction and communication processes, with user-generated content as an essential element. Using this definition of social software, a number of applications are possible including wikis, blogs, micro-blogs such as Twitter, social networks such as Facebook, and social sharing systems such as Flickr or YouTube.

The authors then explore current uses of social software in crisis management. Through this exploration, the authors conclude that Twitter can take over the role of mass media where there are gaps in mainstream media coverage of events. Twitter can then be used to broadcast this information to the public. The retweet function on Twitter can be considered as an evaluation mechanism for identifying relevant information. The authors identified 'information brokers' as users who gather relevant information to make it available to other users. It is concluded that brokerage is more common in crisis situations. Finally, it is noted that collective intelligence can be used to detect missing information and correct it before making it available to large groups of people.

The authors then present two case studies of social software use throughout 2010. The first case study

is the disruption to air travel with the eruption of Iceland's Eyjafjallajökull volcano. During this time, a number of airlines involved used social software such as Twitter and Facebook to offer services to their customers, provide information on the flight ban, link to mainstream news stories on the issues, and also to respond to customers' questions online. This demonstrates the potential for social software to be used as a broadcast medium for companies to facilitate communication with customers. The second case study is the stampede at the Love Parade music festival in Germany. During this event it is noted that only a few images, videos and tweets warned in advance of the crowds. Instead, the bulk of the information was concentrated after the incident, with social software being used to provide first sources of photos and videos to mainstream media. The majority of information provided was used for investigation of the accident or to commemorate victims of the event.

The authors conclude that the social software is an appropriate tool for the exchange of information between citizens and organisations. A tagging function, including geo-tagging, or a Hashtag-Syntax can assist to provide information. However, it is noted that social software has many weaknesses in this respect. Many social software platforms do not automatically tag data with location, or time. The authors conclude with a communication matrix for social software infrastructure that considers:

- Integration, aggregation and validation of citizen-generated content gathered from various social software channels
- Inter-organisational crisis management within the crisis management community
- Self-help communities
- Citizen communication to inform and communicate with citizens with regards to individual needs.

Robnagel, H. & Zibuschka, J. (2011) *Using Mobile Social Media for Emergency Management – A Design Science Approach*, Proceedings of the 8th International ISCRAM Conference, Lisbon, Portugal.

Keywords: Germany, emergency, SMS, social media, Google, Android.

The need for prompt communication during emergency situations leads people to communication channels that are direct and familiar. However, firsthand reports from emergency situations help to overcome confusion that results from often unreliable television broadcasts. Firsthand communication enables ordinary citizens to be involved in emergency response by contributing to disaster relief. This paper presents a system design for emergency support based on mobile social media with the intention of increasing security during large public events.

The system design was developed as part of a German nationally funded project: VeRSiert. After developing an underlying infrastructure, several basic services were implemented, reflecting essential capabilities. These services include localisation of mobile subscribers, message delivery via SMS, multilateral data transfer, access to information databases, support for mobile communications and billing services (p. 2). The platform communicates with mobile network operators and provides basic services for providers (p. 2). The system prototype was developed based on customised open source components, using Google's Android platform for implementation. A custom microblogging service was established to test emergency messages while ensuring confidentiality of witnesses and data contributors without running the risks associated with operating on the conventional Twitter platform.

Simulation studies were conducted in which real users were observed while experimenting with the prototype technology in realistic situations over a fixed time frame. Three independent test subjects were equipped with smartphones and prototype software. The evaluation results indicated that all subjects noted the ease and usefulness of operating with the software prototype.

Robertson, A. & Olson, S. (2012) *Using Data Sharing to Improve Coordination in Peacebuilding: Report of a Workshop by the National Academy of Engineering and USIP Roundtable on Technology, Science and Peacebuilding*, The National Academic Press, Washington DC.

Keywords: peace-building, data sharing, UNITY platform.

This report summarises workshop discussions on the question: 'What needs must a data-sharing system address to create more effective coordination in conflict zones and to promote the participation of federal government agencies and non-federal organisations in peace-building?' The roundtable was established to make a measureable impact on conflict management, peace-building and security capabilities by bringing together leaders from technological and peace-building communities.

Four preliminary themes emerged from workshop discussions:

- Data sharing requires working across a technology-culture divide (p. 15)
- Information sharing requires building and maintaining trust (p. 15)

- Information sharing requires linking civilian-military policy discussions to technology (pp. 15-16)
- Collaboration software needs to be aligned with user needs (p. 16).

The speakers at the workshop provided examples of approaches to improve the impact of data sharing. This includes data integration and visualisation whereby new technology can assist in gathering, integrating, visualising and disseminating data in new ways. Similarly, new software enables increased precision and speed of data collection and analysis, which enable results to be fed back into the data collection process. Data platforms exist and are being continuously adapted to present data in a technological platform allowing user interaction and the layering of large amounts of information from multiple sources. Despite these improvements in data sharing, a number of ethical questions are raised including how to deal with sensitive information, lack of transparency, and the need for dissemination guidelines.

The report then explores the UNITY system to demonstrate effective data sharing. UNITY is a system developed by the Department of Defense (US) and USAID. The system aggregates non-classified data from partners and displays such information through a web browser. The system enables overlays with charts, graphs, tables and a geospatially-referenced map. Through this web browser, each peace-building project is represented as an icon, which can be expanded to view extra information such as budget. The UNITY system enables users to access information in areas of interest while simultaneously sorting, filtering, searching and displaying data according to preferences. Some potential shortcomings of the UNITY approach include a lack of willingness to share information between agencies with different goals, and the tools employed lack a way

for countries included in the database to provide feedback. Furthermore, it is noted that the increasing prevalence of multiple platforms generates duplication and there is a need for varying platforms to engage and communicate with each other.

Starbird, K. & Stamberger, J. (2010) Tweak the Tweet: Leveraging Microblogging Proliferation with a Prescriptive Syntax to Support Citizen Reporting, Proceedings of the 7th International ISCRAM Conference, Seattle.

Keywords: emergency, citizen media, Twitter, hashtags.

This paper considers how existing mobile devices and social media can support the reporting and distribution of information within and across disaster-affected communities, and proposes a low-tech solution for microbloggers to enhance their ability to rapidly produce relevant information in crisis situations. The proposed intervention leverages mobile microblogging and the need to support citizen reporting within current Twitter practices. The authors introduce a prescriptive, tweet-based syntax that could increase the relevance and utility of information generated during emergencies by reshaping current tweeting practices.

Citizen reporting on mobile devices can be an effective way to support information diffusion as a means of integrating with existing practices and reporting structures. Twitter, in particular, is a valuable resource for retrieving, processing and redistributing user-generated information due to its public accessibility and searchability. The retweet, hashtag and follow functions on Twitter have developed over time and in doing so have defined a Twitter-specific language or syntax. Through the

Twitter platform, users develop practices to fit within the language and character constraints of the platform.

The authors propose the introduction of a crisis specific Twitter hashtag syntax, which would allow citizens to upload information in a purposeful and machine-readable way. This would enable the real-time processing of data. The authors propose a training intervention through the Twitter platform and would target popular Twitterers as well as the accounts of emergency response organisations and local media. The authors propose a syntax that would extend hashtag use to help label tweets into machine readable pieces of data/information.

Stauffacher, D., Weekes, B., Gasser, U., Maclay, C. & Best, M. (eds.) (2011) *Peacebuilding in the Information Age: Sifting hype from reality*, ICT4Peace Foundation, Geneva.

Keywords: Haiti, earthquake, capacity development, security, challenges.

This paper reflects on the lessons learnt to date regarding the use of ICTs to assist victims of crisis and explore the actions that still remain to be taken. This paper particularly focuses on lessons learnt after the Haiti earthquake response and whether these can be applied in subsequent emergencies. The authors note that there is much more to be done to strengthen disaster preparedness and crisis information management. Some of these suggestions include:

- The development of databases with essential information to be shared across the UN and other agencies
- The development of ICTs that are more resilient and work better in crisis environments

- The improvement of interoperability systems between the UN and other agencies
- The use of technologies to help communities develop their own capacity and capabilities for early warning systems
- Cooperation between governments and NGOs, based on standard operating procedures
- Involvement of global and local businesses as partners in crisis information management
- The development of a comprehensive toolkit for crisis information management in disaster prone countries (see Hattotuwa and Stauffacher 2010 in this section for similar findings).

It is also noted that a number of key challenges remain for the use of ICTs in early warning systems. It is noted that preparedness measures should be built on local capacity and knowledge. Another challenge associated with the use of ICTs is security. It is noted that in situations of conflict and violence it can be difficult and dangerous to share sensitive information. This is increased by the detectability and traceability of mobile and satellite phone communications. It is recommended that users of ICTs become aware of the risks associated with the use of such technologies and the potential for manipulation. The paper series also notes that the challenge associated with modern, complex crises is not simply sharing information, but sharing the right information.

The series also explores the challenges associated with the accelerating rate of humanitarian response to crises. It is noted that in order to be effective, ICT systems need to remain as simple as possible to limit the scope for error. Similarly, it is recommended that systems be developed locally where possible to involve future victims of disasters/crisis and

harness their capacity. It is noted that not all crises occur in countries such as Haiti, which was relatively responsive to foreign aid. As a result, responders need to be aware of the political situation within their country of operation.

Stauffacher, D., Hattotuwa, S. & Weekes, B. (2012) *The potential and challenges of open data for crisis information management and aid efficiency: A preliminary assessment*, ICT4Peace Foundation, Geneva.

Keywords: open data, capacity development, information access.

This paper explores the concept of open data, which is data that is freely available for use without restrictions. The authors explore whether recent open data movements – such as those initiated by the US, the UK, the World Bank, the UN and so forth – can genuinely be considered ‘open’. It is noted that the potential impact of open governments, open World Bank and open UN data through crowdsourcing and crisis-mapping is enormous. Furthermore, openly available datasets are essential to emergency responses.

However, it is noted, that in reality many response organisations are unwilling to share data, particularly in light of licensing and proprietary interests. Furthermore, challenges are presented in terms of capacity building and the development of technical knowledge to facilitate data sharing and data sharing platforms. The authors recommend that development organisations focus attention on training programs and incentives to integrate and embed these new fields into their future projects. It is also suggested that governments invest in applications to assist in making data accessible and useable to citizens. Another prominent concern with

‘open data’ is security and privacy, particularly for victims of crisis or those living in conflict zones.

Taylor, M., Wells, G., Howell, G. & Raphael, B. (2012) ‘The role of social media as psychological first aid as a support to community resilience building. A Facebook study from “Cyclone Yasi Update”’, *Australian Journal of Emergency Management*, vol. 27, no. 1, pp. 20-26.

Keywords: community, social media, information access, connection.

This paper reviews data collected from an online social media survey developed to explore public use of social media during a series of natural disasters (Australia/New Zealand January-March 2011). The paper explores two aspects of social media use in the context of natural disasters: (i) ability to provide access to timely public safety-related information from official and informal sources, and (ii) ability to enable connectedness (p. 20). Furthermore, the paper is focused on two elements of disaster response and recovery:

- Psychological first aid (PFA) (pp. 20-21) – outlining the first things you might do to assist individuals and families in the first hours following a disaster, designed to minimise stress and meet needs. The six core principles of PFA are to promote safety, calm, connectedness, self and group efficacy, hope and help
- Community resilience (CR) (pp. 20-21) – community level adaptation following a disaster as mediated through four main adaptive capacities (economic development, social capital, information and communication and community).

Data indicated that the public relied on a mix of formal and informal information sources, often using social media to re-post links from government websites felt to be of use to communities (p. 20). In this way, social media acted as a filter/amplifier of official information. Other findings included:

- Popularity of social media, however, there is still a strong preference for emergency information via traditional forms of media (especially TV)
- Social media acted as a conduit, orienting people to official sources of information and amplifying messages to a broader audience (p. 24)
- Most people used social media to seek information about what was happening or to directly ask people for specific information (p. 24)
- A third of respondents spent most of their time providing general information/ responding to questions (p. 24)
- A quarter of respondents used social media to request help
- Respondents overwhelmingly reported a sense of feeling connected and useful, encouraged by the help and support of others.

In the context of PFA, all of these activities promoted safety, connectedness, self and group efficacy and help. In terms of CR, these activities directly supported the adaptive capacities of information and communication, as well as helping to bolster social capital and community competence.

Tseng, S.F., Chen, W.C. & Chi, C.L. (2011) 'Online social media in a disaster event: Network and public participation', 167 CCIS, http://link.springer.com/chapter/10.1007/978-3-642-22027-2_22?null

Keywords: Taiwan, typhoon, microblogging.

This paper explores the role of Internet tools (blogs, Twitter, etc) to transmit emergency information during the August 2009 Taiwan typhoon. The paper explores how microblogging applications facilitate public engagement and collaboration in an emergency management event. Facing inadequate government response to the typhoon and an inability to provide accurate information, the Internet community of Taiwan responded in a more efficient manner. Social media is identified as having two major functions during this event: (i) information dissemination and networking, and (ii) resource mobilisation.

There were three main findings of this study:

- Microblogging applications presented potentials for public participation and engagement in crisis events
- These 'end to end' users of blogs and Twitter successfully employed collective networking power and played a vital role in this disaster event
- The use of social media as a more efficient disaster backchannel communication mechanism demonstrates the possibility of governmental and public collaboration in times of disaster.

United Nations Foundation (2011)
*Disaster Relief 2.0: The Future of
Information Sharing in Humanitarian
Emergencies*, United Nations
Foundation, Washington DC.

Keywords: humanitarian assistance, ICTs, volunteers, capacity, innovation, collaboration, constraints.

This report analyses how the humanitarian community and the volunteer/technology communities worked together in the aftermath of the 2010 earthquake in Haiti, recommending ways to improve coordination between these groups in future emergencies. The report recommends a five-part framework (pp. 45-46):

- › A neutral forum to identify areas of agreement and conflict between international humanitarian systems and volunteer/technical community
- › An innovation space where new tools and practices can be explored as experiments, allowing for the failures that are a necessary component of learning new ways of working
- › A deployable field team with a mandate to deploy the best available tools and practices from volunteers/technical community to the field
- › A research and training consortium to evaluate the work in the field and to train humanitarians and volunteers/technicians alike in the best practices for information management in a humanitarian context
- › A clear operational interface that outlines ways of collaborating before and during emergencies, with agreed procedures for communication, shared standards for data

exchange and an understanding of roles, priorities and capabilities.

The report notes that when respondents arrived in the Haitian capital they faced an unprecedented information gap and struggled to access even the most basic datasets. Against this backdrop volunteer and technology communities rushed to fill the perceived information void through the leveraging of social networking and mobile phone based tools to aggregate, analyse and plot data about human needs. Under existing UN approaches, data is designed to flow through the humanitarian cluster (UN and NGO agencies) who are tasked with processing, analysing and periodically briefing decision-makers at meetings and through situational reports. During the Haiti response, two new data in-flows were added to the system: (i) from volunteers and the technical community, and (ii) from the affected community of Haitians.

The report notes that should such communities continue to engage with humanitarian agencies in the future, they face the risk of overloading the system with too much information. The authors argue this can result from four major causes:

- › Capabilities of existing information management systems – The cluster system was neither structured nor given the resources and tools to deal with the complex information dynamics it faced in Haiti. Information managers became overloaded by information due to a variety of structural issues, lack of resources and delays in information flows
- › Volunteer and technology communities unintentionally overloading the system – A growing number of volunteer and technical communities mobilised valuable tools for collecting, analysing and visualising data. Only an ad hoc means existed to make shared data useful to the field of emergency

responders. As a result, the information that was voluntarily submitted and the speed with which this was done only served to exacerbate the sense of overload felt by information managers

- Disaster affected community data flow rate – The affected population became mobile-enabled, allowing for direct communication with emergency managers and an international audience. This resulted in hundreds of thousands of requests for aid and assistance
- Expected analysis rate – Expectations of what should be known in response operations have dramatically increased. It was expected that the formal communication system would have far better capacity in regards to dealing with the humanitarian response and demanded an unrealistic, comprehensive picture of the problem, hampered by a lack of technical resources and staff.

The report proceeds to examine the potential for new ideas to displace traditional practices during times of crisis to justify the employment of older technologies by humanitarian agencies for reasons of awareness, reliability, trust and brand, professionalism, open standards and verifiability. It is argued that in order to open their information flows into the international system, volunteers and the technology community will need to develop an interface – that is, a set of protocols governing flows of data, as well as different ways of decision-making, problem solving and conflict resolution. In order to develop this interface, six core tasks are identified: (i) identification of common problems by key stakeholders, (ii) innovating through field experimentation, (iii) cross-training personnel in tools and practices from the formal and informal humanitarian system, (iv) deploying a coordination

cell, (v) integrating tools and practices into formal policy, and (vi) evaluating the results. The authors conclude by proposing a design for an interface comprising of four elements: (i) humanitarian technology forum, (ii) humanitarian innovation lab, (iii) humanitarian information coordination cell, and (iv) humanitarian research and training consortium.

The first element – a humanitarian technology forum – is envisaged as a neutral space where meetings would be facilitated by moderators and membership is available for both practitioners and academics. The forum would be budgeted for start-up costs and facilitation. The second element of this design is a humanitarian innovation lab designed to connect data to specific decision-making cycles. This lab would hear recommendations from all three elements of the organisational design, with a view towards facilitating open source software design. Membership would include UN staff, NGO staff and independent contractors from the volunteer/technology communities. The third element of this design is a humanitarian information coordination cell – a neutral scientific space for evaluation of tools and practices, measurement and impact of policies, training, and monitoring and evaluation. This would be made up of a network of education institutions. The final element of this recommended design is a humanitarian research and training consortium, which would be the organisation responsible for building a picture of response organisations. This consortium would comprise of specialists in information management, geographic information system analysis, SMS-based crowdsourcing, communications and so forth.

UNOCHA (2013) Humanitarianism in the Network Age: Including World Humanitarian Data and Trends 2012, United Nations.

Keywords: humanitarian assistance, information, new media, basic needs, capacity building.

This report investigates how increasing shifts in communication technologies will affect the delivery of humanitarian aid. The report explores how new communication technologies are affecting individual behaviour in emergency situations. This includes the spread of mobile phones and the growth of social media and the Internet, which enable individuals to connect with others that they previously could not.

The paper outlines the new features of such technologies and explores the opportunities and difficulties associated with applying them. It is noted that analysis of emergency response reveals that poor information management has severely hampered effective action. In a crisis, timely access to information is essential and new technologies offer the chance to correlate and analyse large pools of information. Furthermore, geographic information system data enables this information to be situated and categorised into a particular place and time. Crowdsourcing and crisis-mapping technologies enable organisations to visualise information in a low cost manner. Innovations such as mobile money enable faster and more secure ways of delivering resources to those in need and gain a better understanding of how those resources are being used. However, it is noted that these technologies still carry the potential for error and manipulation, as well as security concerns around data access. Furthermore, the amount of data being generated and the increasing number of organisations involved in crisis response can lead to information overload.

The paper also explores the ways in which agencies are adapting to more open, participatory ways of interacting with people during crises. It is noted that humanitarian agencies must adapt to work with new data sources to access more relevant, timely and reliable information. Furthermore, it is suggested that humanitarian agencies must work with new partners and new techniques. These technologies are enabling organisations to collaborate with a wider range of partners and work more closely with the affected communities. Through these partnerships it is necessary to develop products and tools that are capable of being used and understood by both sides. It is also noted that humanitarian agencies must adapt to the idea of information as a basic need in a humanitarian response. The authors note that information must be understood as a product to assist communities in determining their own priorities.

The report concludes with recommendations and objectives for humanitarian organisations. These include (p. 57):

- Recognising information as a basic need in humanitarian responses
- Ensuring information relevant to humanitarian action is shared freely
- Building capacity with aid organisations and governments to understand and use new information sources
- Developing guidelines to ensure information is used in an ethical and secure manner.

Yasin, R. (2010) '5 ways social media improves emergency management', *Government Computer News*, vol. 29, no. 15, p. 18.

Keywords: USA, emergency management, warnings, Twitter.

This article explores the ways in which social media tools are being used to report emergencies. In particular, it is argued that social media tools are changing emergency management in five ways:

- Reaching a wider audience – social media is used to expand the concept of 'trusted communities'. This is explored through the San Francisco government's use of Twitter to issue public warnings, and issuing of text-based alerts
- Sending/receiving emergency alerts – social media can help responders/emergency workers capture panic or emergency alerts. This is explored through a Texas initiative designed to deliver location-specific alerts to residents during a crisis and allow them to connect with emergency workers via smartphones
- Monitoring conversations – social media can be used by emergency responders not only to broadcast information but also to monitor incoming information, particularly from related agencies
- Integrating data sources for situational awareness – to enable emergency responders to get a better view of emergency situations. This is explored through the Virginia Department of Emergency Management's emergency management system (VIPER). This system is geospatial-based and integrates with numerous information systems and data feeds to supply web-based pictures and tools of analysis. This enables a variety of emergency responders to tap into a single information source to gain an accurate understanding of events
- Collaborating with responders – an improved coherence among agencies. The creation of online sharing, online agency cooperation and online networks and communities to facilitate the sharing of unclassified information.

