Sharing News, Making Sense, Saying Thanks: Patterns of Talk on Twitter during the Queensland Floods

Introduction

Between December 2010 and January 2011, the Australian state of Queensland experienced major flooding, acutely affecting the major population centres of the south east of the state and bringing major flooding to the capital city Brisbane. This event saw a high level of social media activity – including on behalf of official emergency response organisations – that was unprecedented for a natural disaster in Australia, and that was coordinated on Twitter predominately via the #qldfloods hashtag. The #qldfloods event was an early intimation of the importance – both for authorities and the community at large – of quasi-public social media platforms like Twitter and Instagram in the disasters that have followed. For example, these platforms were used extensively during the 2011 earthquakes in Christchurch, New Zealand (Bruns & Burgess, 2012), with the 2011 earthquake and tsunami in Japan (Hjorth & Kim, 2011), and during Hurricane Sandy in the United States and the Caribbean (Lotan, 2012).

We examined some of the uses of social media during this crisis event by collecting and analysing tweets related to the Queensland floods. Through our analysis, we can better understand the communicative and informational needs of both local and distant stakeholders during disasters. We are also able to explore ways of improving the efficacy of social media use by emergency organisations and the general public (for a comprehensive presentation of this study's methods and its main findings and recommendations, see Bruns, Burgess, Crawford, & Shaw, 2012).

In this article, we focus specifically on the *discursive* aspects of Twitter communication during and following the floods – on patterns of talk. Grounded in the emerging body of literature on the use of social media during crisis events, as well as in our own quantitative and qualitative analysis of the #qldfloods data, we show that participants in the #qldfloods conversation were engaged in a collective response to the natural disaster and its consequences for their own lives and the lives of others. Participants used Twitter to help make sense of the disaster, as well as to show (and to perform) certain kinds of support and care for others.

Twitter and Crisis Communication

Hermida (2010) argues that social media platforms turn news into a social experience: they enable a distributed conversation in which individuals respond collectively to particular events. He describes this as 'ambient journalism': individually, social media users contribute small pieces of content that in aggregate form a journalistic account of events (Hermida, 2010). Ambient journalism can be understood as a constant background presence in social media spaces, but pushes into the foreground when major events unfold; what results is a 'public and collective' expression of public affect about a particular event. Significantly, this process occurs in connection with and in response to traditional news organisations.

Our data on the use of Twitter during the Queensland floods crisis can be taken as an example of such a public and collective response: they show how Twitter provided its users with a shared

platform to talk about the disaster. In the discussion which follows, we focus specifically on three key phenomena in the use of social media in crisis communication: communal sense-making practices, the negotiation of participant roles, and digital convergence around shared events.

Communal Sense-Making

James Carey observed that communication is commonly understood as a transmission of messages in space, but it can also be a ritual: a ceremonial process that draws people together through shared beliefs (1989, 15). Twitter is a network "where rituals and transmissions are imbricated: communities of interest form clusters, and messages pass between them, with the occasional message being circulated to a much wider group" (Crawford, 2010, 150). During disasters, we can see a wide range of uses for Twitter develop and shift depending on the scale and stage of the acute event. Uses include seeking help, providing information and assistance, and responding emotively or evaluatively to the situation, including through political statements or expressions of grief and support (Palen & Liu, 2007; Hjorth & Kim, 2011).

While literature on Twitter use during crisis events has tended to focus on uses for situational information sharing and information dissemination by emergency services (e.g. Hughes & Palen, 2012; Vieweg, Hughes, Starbird & Palen 2010), there is a smaller though significant subset of the literature that explores communal sense-making processes and the social space of crisis communications. This paper focuses on these aspects of social media use. We build on a tradition of event-based case studies within the field of social informatics, and draw on a number of the methods and concepts developed within this tradition: in particular, those which enable us to understand how participants use Twitter to talk about and make sense of their experiences.

Some of the crisis informatics literature explores how everyday social media users develop informal systems of crisis management to deal with a dearth of information, in order to argue for the development of collaborative crisis management systems that deal with the most productive aspects of both formal and informal approaches (e.g. Dandoulaki & Halkia, 2010). Palen and Vieweg's (2008) research on university shootings uses textual analysis of online conversations to determine how individuals were using social media after the 2007 Virginia Tech and the 2008 Northern Illinois University shootings. They find that people were engaging in practices of collective intelligence and social creativity to deal with the crisis (Palen & Vieweg 2008). Likewise, Starbird & Palen (2011) show how participants engaged in self-organising, coordinated 'digital volunteer' efforts during the 2010 earthquake in Haiti. Sutton (2010) found that Twitter users corrected misinformation and mitigated rumours within their networks. These tendencies were confirmed in our own study, which found especially that @QPSMedia's 'mythbuster' tweets were highly 'resonant' (in the language of Zhou, Bandari, Kong, Qian & Roychowdhury, 2010, where that term means frequently retweeted) – more so than any other information provided by the @QPSMedia account. These studies also show that through the exchange of situational information, as well as through other forms of crisis-related communication, participants collectively make sense of the crisis events they are experiencing (see e.g. Heverin & Zach, 2012).

Negotiation of Participant Roles

All participants in such distributed conversations about disasters – emergency authorities as much as individual users – must collectively negotiate the roles of and social relations between the

different actors in a crisis (Robinson 2009). Such role negotiation can unfold through positive as well as negative feedback.

Twitter enables individuals to respond collectively to crisis events, and becomes part of their individual and communal coping strategies. *Ad hoc* "crisis communities" form around emergencies, and Twitter temporarily becomes a crisis communication platform (Bruns & Burgess, 2011). This is by accident rather than by design, as Goolsby (2010) argues: it results in chaotic and *ad hoc* strategies for coping with emergencies by using social media, and authorities therefore often find it difficult to control the information that reaches the public. Nonetheless, the significant public take-up of Twitter and other social media platforms during crisis events means that authorities must develop strategies for effective crisis communication and emergency management which do address social media spaces, in order to avoid confusion and address misinformation, while also allowing for these spaces to be used for emotional exchanges and communication of distress.

Literatures of 'Digital Convergence'

Research into the sociology of disasters sheds light on how and why people might use social media in such ways during crisis events. Hughes, Palen, Sutton, Liu and Vieweg (2008) build on the disaster behaviour frameworks established by Fritz & Mathewson (1957) and Kendra & Wachtendorf (2003), extending the concept of convergence behaviours to social media, arguing that casual onlookers and the directly affected converge online, and describe such behaviour as 'digital convergence'. This is not to be confused with the concept of convergence as commonly used in media and communication studies, where the term is used to refer to the convergence of industries, technologies, and communicative and social practices in the wake of new digital technologies. Hughes et al. (2008) developed a typology of communication strategies which recognises the following behaviours and motivations for what they describe as digital convergence: *helping, being anxious, returning, supporting, mourning*, and *being curious*.

Extending our overall analysis of the use of Twitter during the 2011 south east Queensland floods (see Bruns, Burgess, Crawford & Shaw, 2012), this paper specifically examines the patterns of talk within the #qldfloods Twitter hashtag which demonstrate these processes of communal sense-making and role negotiation during a shared disaster experience, and broadens and complicates the concept of digital convergence.

Methodology and Overview of the Dataset

Using the (now defunct) web-based Twitter archiving service Twapperkeeper, we collected all available tweets that included the #qldfloods hashtag. While this method does not capture any floods-related tweets which did not use the 'official' hashtag, it arguably captured the *core* of all floods-related communication using Twitter: during an acute crisis event, users conscientiously hashtag any tweets which they feel are of interest to people following the crisis, and encourage others to do the same (see Bruns & Liang, 2012, for a detailed evaluation of Twitter data gathering approaches). Our #qldfloods hashtag dataset therefore constitutes an accurate representation of the Twitter feed experienced by users who followed the hashtag at the time. Fig. 1.1 shows the total volume of #qldfloods tweets per hour during the main week of the south east Queensland floods (10-16 Jan. 2011).
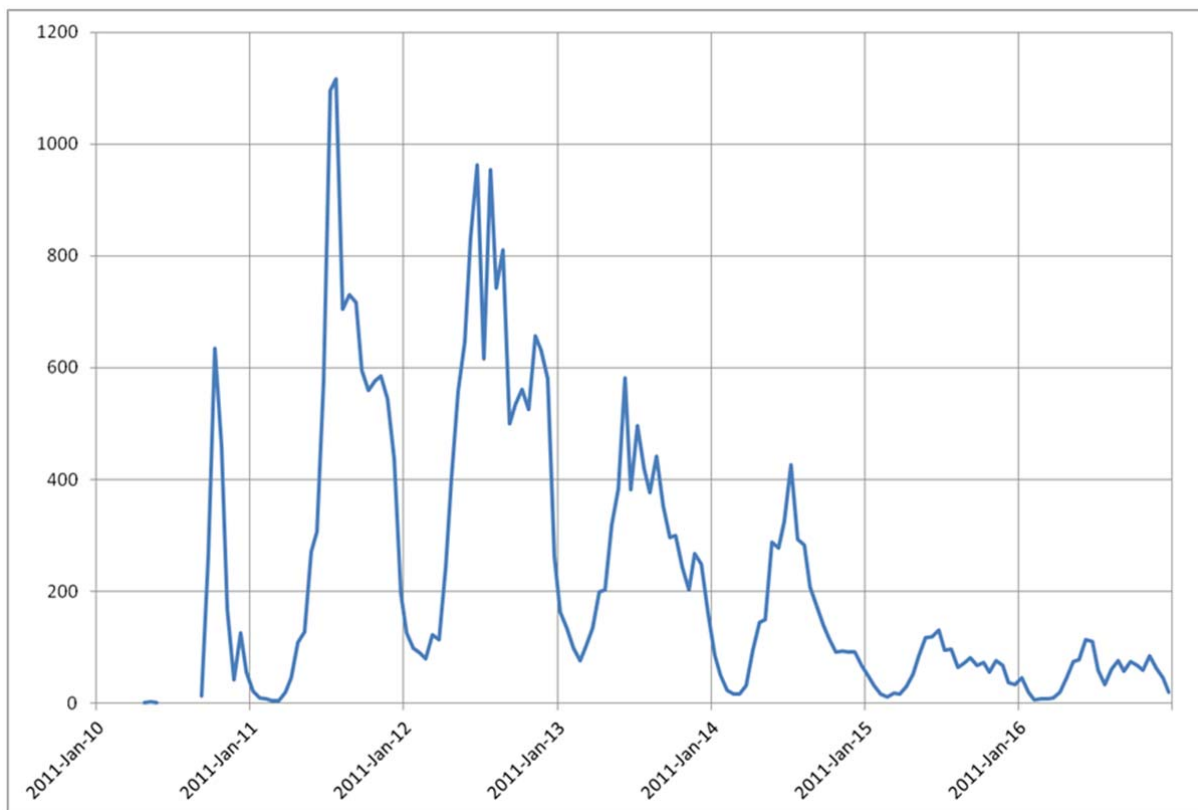
Fig. 1.1: #qldfloods tweets per hour, 10-16 Jan. 2011. Twitter activity coincided with the peak days of flooding in the most populated areas of Brisbane and Ipswich.

From the more than 35,000 tweets available in the hashtag archive for this week, we sampled every 20th tweet for further manual analysis. Such sampling is necessary given the substantial size of the dataset and the limited manual resources available; a regular sampling approach (selecting, literally, every 20th tweet) ensures that the selected 5% of tweets are well-distributed across the entire volume of the dataset, and that the peaks and troughs in tweeting activity remain represented in their original proportions.

We created a second dataset which contained *all* those tweets from the #qldfloods archive that were written by or addressed to the @QPSMedia account. This account was operated by the Queensland Police Service Media Unit, and our analysis in Bruns, Burgess, Crawford and Shaw (2012) showed it to play a central role in the Queensland floods discussion on Twitter.

For our analysis of the content of these tweets, we developed a set of thematic and purposive categories and applied these to the two sample datasets. In developing our coding categories, we were guided by studies of previous disaster events from the field of crisis informatics. Our initial coding categories were based on Qu, Wu and Wang's (2009) typology developed in their study of the communication of local and national communities on the Tianya discussion board during the 2008 Sichuan earthquake, in which.they identified information, opinion, action, and emotion as primary categories.

.In the first iteration, a single coder applied these basic categories to 1000 tweets drawn from both datasets, using this pilot phases to develop a larger, more fine-grained and context-appropriate set of categories. A coder agreement exercise was then conducted using two coders, resulting in the

refinement of the code book and category definitions, including the development of a hierarchical typology – as shown below. The same two coders conducted a further coder agreement exercise using 100 tweets from each dataset, resulting in coder agreement of over 80%. A single coder then proceeded to code the full dataset. In this final iteration, we categorised particular genres of tweets as representing a set of five specific purposes:

- **Information**
  - Advice / instructions
  - Situational information
  - Requests for information
- **Media Sharing**
  - News media updates
  - Multimedia
- **Help and Fundraising**
  - Help
  - Fundraising
- **Direct Experience**
  - Personal narrative and eyewitness reports
- **Discussion and Reaction**
  - Adjunctive discussion
  - Personal reaction
  - Thanks and gratitude
  - Support
  - Meta-discussion

The results pointed to the overall trends in the use of Twitter during the Queensland floods, indicating which purposes and motivations for communication dominated at different times of the crisis. Fig. 1.2 shows the daily activity trends for the #qldfloods 5% sample.
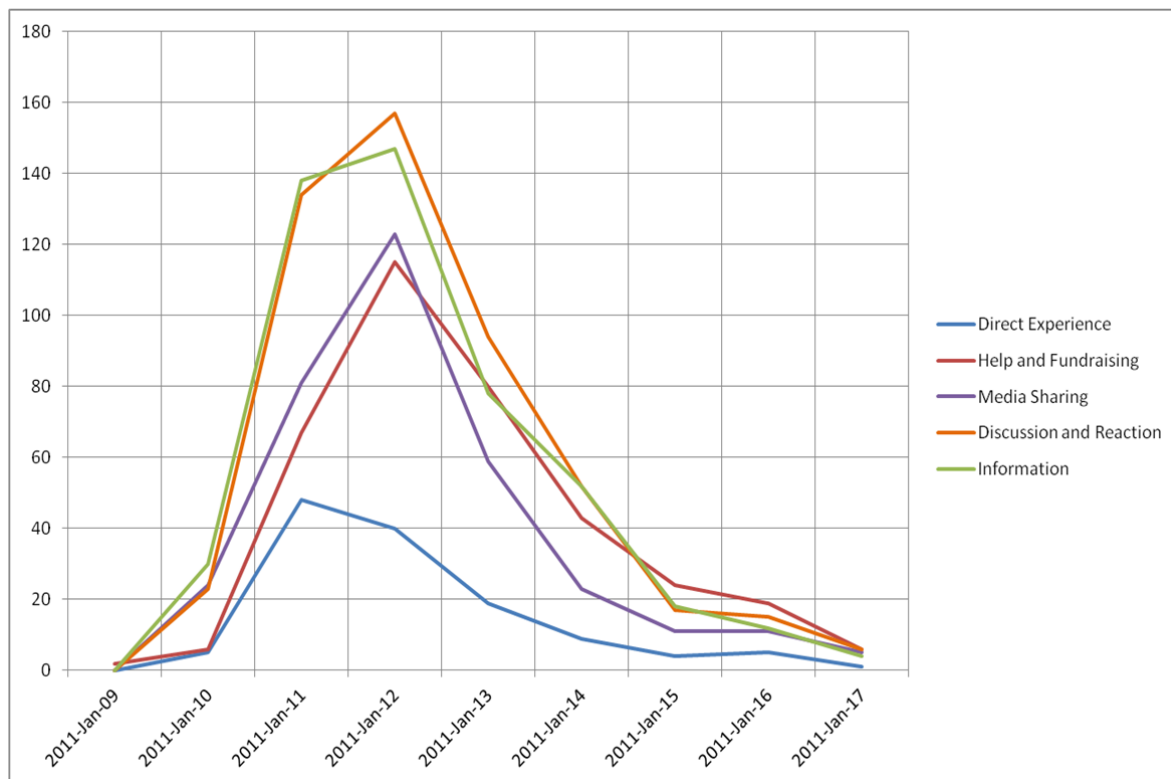
Fig. 1.2: #qldfloods tweets per day (5% sample of all #qldfloods tweets). Breakdown of communication types.

A further qualitative analysis of each communicative genre, across both datasets, made more explicit how people were using social media, how they felt about using social media in this way, as well as how they benefited from and appreciated social media during the time of crisis. It also sheds light on people's frustrations and the tensions and conflict that they encountered in discussions of the disaster. In particular, we found that people used social media to set boundaries for the acceptable behaviour of others during the crisis, such as through the expression of approval and disapproval for particular forms and modes of communication. This points to how the 'contact zone' (Stewart, 2007, 4) of Twitter is not frictionless or smooth, and communal sensemaking during disasters occurs through conflict as well as through sympathy and support.

Qualitative Analysis

Sense-Making Practices

Our qualitative analysis of Twitter activity in the #qldfloods hashtag confirms the presence of practices of sense-making, unfolding in the first place through the direct narration of personal experience. Users discussed their flood preparations, the current situation on the ground, and their roles in the subsequent clean-up effort. The narration of the clean-up and recovery process was a strong theme:

> Saw houses affected by the floods today. Ppl's furniture covered in sludge. #qldfloods #sad

> Just got a phone call from friends. They are going down to the RNA Showgrounds to volunteer. We are going to help out as well #qldfloods

> Goodnight twitterverse this is one tired chicken its been hard work helping #qldfloods today need sleep so I can do it all again tomorrow!

Personal narrative tweets were also used to reassure Twitter followers of the safety of the sender and their family members, in messages such as "I'm okay" and "I called my family and they're okay". Since hashtagging meant that these tweets were visible not only to the sender's own followers, but also to the broader #qldfloods network, this was also a way to express involvement and entanglement in the broader crisis – that is, to make sense of one's status as a flood victim or volunteer within a wide terrain of disaster events occurring through south-east Queensland.

Through their conversations about the floods on Twitter, participants also negotiated and framed how the floods should be understood on a broader basis. By engaging in ancillary discussion beyond the exchange of immediate, situational information, participants used the crisis to explore other issues, and to position those issues in relation to the crisis. For example, participants evaluated the performance of politicians in relation to the floods in statements such as "I have a feeling [former Prime Minister] Kevin Rudd would be more human in the face of the floods than [his successor, current PM Julia] Gillard is" and by showing approval and appreciation for Queensland Premier Anna Bligh's leadership during the crisis.

Some 10 days after the peak of the floods, the hashtag was also used to negotiate an appropriate response to the Flood Levy (a one-off nationwide tax used to raise funds for Queensland reconstruction efforts), with the majority of participants giving reasons why the levy should be accepted, and in particular trying to correct false assumptions about the levy, such as that it covers private individual flood losses or is a replacement for insurance. Some participants admonished critics of the tax, calling the attitudes "appallingly selfish". A common sentiment expressed during this phase is echoed by the tweet

> Happy to pay a levy for flood victims and the reconstruction. That's what tax is for – supporting fellow Australians. #qldfloods #vicfloods

Such examples point to both immediate and more intermediate practices of communal sense-making. During the immediate flood crisis, current information is processed and placed into a wider context, incorporating the situation on the ground but also wider frameworks such as the national political environment; as the immediate crisis passes, sense-making practices come to take a longer-term perspective which embeds the crisis within an overall Australian historical (social, political, economic) narrative. These examples also reveal how sense-making is developed in tension, as individuals express disagreement, develop conflicts, or criticise behaviour that is seen to be in opposition to a wider set of normative practices on Twitter.

Such sense-making, especially where it seeks to define 'appropriate' responses to the crisis or to praise or admonish specific participants for (not) acting with the parameters of acceptable activity which are thus defined, also serves to establish and maintain a set of roles which participants may aspire to assume. In addition to the comments about the performance of individual politicians which we have already highlighted above, an ongoing negotiation of roles was evident in our analysis of the @QPSMedia dataset, which explored interactions between the Queensland Police Service Media Unit account and its followers.

Negotiation of Roles

A significant sub-category of the 'Discussion and Reaction' tweets in the @QPSMedia sample was devoted to expressions of thanks and appreciation for the role that police played in the crisis. Thanks and appreciation are not frequently discussed in the more instrumentalist crisis informatics literature, but given their prominence in the #qldfloods dataset, attention to them by researchers might widen the set of disaster behaviour frameworks discussed in Hughes et al. (2008), Fritz & Mathewson (1957) and Kendra & Wachtendorf (2003).

Such tweets formed part of a collective analysis of the Queensland Police Service's role in the crisis, and of its use of the @QPSMedia account (and its other social media presences) as an element of that role. Many users expressed the hope that in future, social media would perform an ever-increasing role in the dissemination of information during crisis events. Others expressed their appreciation because they had been looking for information in various social media channels, and found it through the @QPSMedia service:

> @QPSMedia is doing a stellar job in a real crisis. Thank you QLD Police Service. #qldfloods

> @QPSMedia Thank you for using twitter to keep everyone up to date. And for clearing up all the misinformation so quickly #qldfloods

The combination of mainstream media information gaps and social media sense-making practices is useful to explain the many expressions of thanks in this context: sense-making theory argues that approaches to information dissemination should always be user-centred and responsive to user needs and information gaps; rather than wanting volume in information, people desire information that will fill their own, personal, specific gaps in knowledge (Savoleinen, 1993, 13).

As a result, @QPSMedia – and other key sources of crisis information within the #qldfloods community – became remarkable because they managed to fill the information gaps left by other media forms and to do so with the aura of authority and reliability. This is reflected in the substantial thanks expressed to social media information providers during the Queensland floods: fig. 1.3 shows the key terms used in tweets from our 5% #qldfloods sample which were coded as expressing thanks and appreciation.

Fig. 1.3: word cloud of key terms in 'thanks and gratitude' tweets in the #qldfloods sample.

Beyond such specific, directed expressions of *thanks* (towards @QPSmedia and other key participants in #qldfloods crisis communication), users were simultaneously performing a more general form of *gratitude*. Scholars have discussed the way that gratitude became particularly valued after crisis events such as the 11 September 2001 terrorist attacks, in which positive emotions such as gratitude and love for family were valued and expressed alongside fear, grief and mourning (Fredrickson, Tugade, Waugh, & Larkin 2003, 366; Peterson & Seligman, 2003, 382).

In this context, we note that the biggest contrast between the @QPSMedia and the #qldfloods samples in our study was that the former was centred largely around expressions of thanks and gratitude, while the latter featured a greater number of expressions of personal shock and horror at the events as they unfolded. Emergency services and other authorities (including political leaders) are expected by the wider Twitter community to fulfil specific roles, both in their social media activities and in their overall actions during the crisis, and their performance of these roles is evaluated through sense-making processes.

Individual users – whether directly affected by the crisis or looking on from a greater distance – also negotiate their own roles through this process: appropriate and inappropriate forms of social media participation are communally defined and policed, with expressions of direct thanks and more indirect gratitude (as well as sorrow and sadness) being used to publicly adopt an appropriate normative stance.

Digital Convergence

In crisis informatics, "convergence behaviour" refers to the tendency of individuals during crisis events to converge on the site of the crisis, practicing behaviours such as sight-seeing or disaster pilgrimage and sharing expressions of support and concern for participants. Our analysis of the #qldfloods datasets points to the presence of such digital convergence. Participants expressed a sense that by participating in the #qldfloods conversation, they were part of something important or necessary:

> This sounds stupid but it kind of feels important to be on Twitter today. #qldfloods

> Noticing social media sites are doing a much better job of dispersing info in a crisis than traditional media outlets #qldfloods

> I feel like a RT bot today but please understand it's for the #QldFloods.

As the final tweet above already indicates, many Twitter users chose simply to retweet the messages they encountered through the #qldfloods hashtag, in order to make them visible to any of their own followers who may not yet have been following the hashtag feed itself. Such users engaged in behaviours of amplification, retweeting information they considered important for others, in order to be part of the process of crisis response and information sharing – even if the retweeting users themselves were located at considerable geographic distance from the Queensland floods disaster area.

Our quantitative analysis (Bruns, Burgess, Crawford & Shaw, 2012) demonstrates that @QPSmedia would not have been as visible to the wider Twitter community, and thus as successful in disseminating crisis information, without such user-led amplification. It was only with the assistance of a loose collective of retweeting users that the Queensland Police Service Media Unit account was able to disseminate its information quickly and accurately. Indeed, especially important messages sent by @QPSMedia – such as its #Mythbuster tweets, designed to combat rumours and misinformation – were effective because they were so widely retweeted. Twitter users were eager to maintain veracity and help @QPSMedia and other official accounts stamp out rumours, leading to a high retweet rate for these particular tweets. Sutton (2010) argues that by engaging in such activities, social media users are able to fill the gaps where official media sources fail to disseminate important information. Individuals become active participants in fact-checking processes, acting as "public editors" of crisis information (Sutton 2010, 6).

The case of @QPSmedia demonstrates a more collaborative association between users and authorities. Here, the need for the broader Twitter community to make up for what Sutton (2010) calls "the dearth of participation among public officials" was less pronounced; instead, users were able to put their energies towards promoting, retweeting, and recommending the mythbusting messages posted by the @QPSMedia account, as well as to alert @QPSMedia to new rumours which may need to be addressed in future 'mythbuster' messages. After a 'broadcast only' start, @QPS Media rapidly learned to 'listen' to the flow of messages about the floods, amplifying those that would be useful to a wider audience and quashing rumours. This process of being attentive to the social circulation of disaster communications has ramifications for the work of emergency services in future, pointing to the usefulness of committing resources to the 'labour of listening' during crises (Crawford 2009, 531).

Conclusion

This paper has outlined a typology of discursive activity drawn from the coding and comparison of tweets collected during the Queensland floods crisis, building on concepts from the emergency management literature, and focusing in part on the role of a key emergency response organisation in relatio to the broader Twitter userbase. We began with an overview of what kinds of information were exchanged during the crisis event; we then closely examined selected tweet categories to explore the collective processes at play. In particular, we have been able to trace processes of

communal sense-making and role negotiation, and to examine the reflections and limitations of the concept of "digital convergence" when considering a diverse group of crisis stakeholders in the #qldfloods Twitter hashtag.

Expressions of gratitude represented a significant form of discourse during the floods, particularly in relation to the efforts of @QPSMedia. Publicly saying thank you to emergency services was a popular activity, even with users well beyond the disaster, and the high level of retweeting messages of gratitude indicates that this is a significant form of emotional engagement with an acute event. Thus, disaster behaviour frameworks and typologies of communication strategies could benefit from including an analysis of how gratitude is expressed and circulated. Our findings also indicate the substantial potential for bilateral collaborations between formal emergency authorities and informal crisis communication communities within shared social media spaces.

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