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How Information around Acute Events Comes into Being on Social Media: A Comparative Analysis of Interpretive Communities on Weibo and Twitter

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Abstract: In this digital age, as social media is emerging as a central site where information is shared and interpreted, it is essential to study information construction issues on social media sites in order to understand how social reality is constructed. While there is a number of studies taking an information-as-objective point of view, this proposed study emphasizes the constructed and interpretive nature of information and explores the processes through which information surrounding acute events comes into being on micro-blogs. In order to conduct this analysis systematically and theoretically, the concept of interpretive communities will be deployed. This research investigates if or not micro-blog based social groups can serve as interpretive communities, and, if so, what role might they play in the construction of information, and the social impacts that may arise. To understand how this process is entangled with the surrounding social, political, technical contexts, cases from both China (focusing on Sina Weibo) and Australia (focusing on Twitter) will be analysed.

Keywords: microblogs, acute events, interpretive community

1. Introduction

Today, in this network society (Castells, 2011), our relationship with information has changed a lot compared to that in the age of mass media. On the information consumption side, various information communication technologies (ICTs), especially portable devices and wireless technologies, make instantaneous and ubiquitous information access possible. On the production side, digital technologies bring about the participatory culture (Jenkins, 2009) that can be exemplified with the explosion of user-generated-content (Vickery and Wunsch-Vincent, 2007) or the emergence of participatory journalism (Singer et al., 2011).

New dynamics in people's interaction with information and with each other, as demonstrated above, raises questions about new power relations between entities involved in the information-making process. It is worth pointing out that "information" and "power" have long been discussed together: from Marx and Engels' (1964: 64) political economy critique of ruling class' ideology, to

Foucault's (1982) exploration of the relationship between knowledge and power; from Frohman's(1982, 1995) "regimes of information" , to Castells' (2011) discussion of network position and social control. This close relation between power and information explains why it is important to study information: to study information is an effective way to look at the social and political power of communication and the constitution of values. This research attempts to uncover such power practices in the social media-based communication process, and micro-blogging will be the main platform studied in this research.

There are different angles to explore information-related power practices. This proposal will focus on the constructive and subjective nature of information, and analyse the socio-technical processes through which information comes into being on social media. This proposal looks at this question through the lens of interpretive communities. This research will first investigate whether or not micro-blog based social groups can serve as interpretive communities, and, if so, what role might they play in the construction of information, and the social impacts that may arise. This proposal looks at micro-blog information-making during acute events (Burgess and Crawford, 2011) exclusively, because critical events bring about stronger signals that can be used to detect interpretive and communicative activities. In order to examine how these activities can be influenced by the social, political, and technical contexts, both Twitter and Weibo, China's major microblogging site, will be examined.

2. Conceptual Framework

2.1. What is Information?

Information has been defined in various ways by different disciplines, and the focus of this section is to discuss how the term information should be perceived in this proposed study. Levitan (1980: 244) depicted information as an infinite variable in that it characterises every different subject that one is able to recognise, and as he explained "it is ubiquitous in that it pertains to everything". This observation of the term information can be seen in media and communication studies. In media study scholarship, the concept of information has been studied in various ways: "as an object or a commodity, an agency, a resource, and so on" (McQuail, 2010: 350). Despite such a wide application of this concept, in most cases it is used colloquially as a synonym for other terms like "content" (Bruns, 2008: 31), "data" (Benkler, 2006; Andrejevic, 2013) and "news" (Benkler, 2006: 313), "knowledge" (Jenkins, 2009). Not surprisingly, the first definition of information given by Oxford Dictionary of Media and Communications (2014) is "synonym for data, facts, or knowledge".

However, this proposal rejects such colloquial use of the term information. Only by distinguishing information from its lower level (e.g., data) can we detect the process how information comes into being, how certain messages are valued as 'information' while others are treated as 'noise', and who take the major role in such process. Such analysis can open a window to see social and political power of social media communication and the constitution of values. Even though this proposal is situated in the discipline of communication, concepts are drawn from

information theories to logically and systematically introduce how 'information' should be studied from different levels.

One systematic way to look at information is to analyse it on different levels of communication. This proposal will take Weaver's (1949) tripartite analysis of communication process. According to Weaver (1949), communication process can be broken into three levels: technical level, semantic level, and influence level, and information can be defined differently on the first level and the second/third level of communication. Table 1 summarises how information is differently defined on these three different levels of communication process.

Table 1

Levels in communication process	**Information definition**	**Purpose of communication**
Technical level	Information is data, at this stage meaning is not relevant	Selection To selectively transmit messages from sender to receiver.
Semantic level	Information is meaningful structured data	Interpretation To make sense of data
Influential level	**Information is meaningful structured data**	**Impacts** **To influence human behaviour or the society as a whole**

On the technical level of communication, information is also called 'selective information'. Information theorists are mostly concerned about information on this level. Shannon (1948) defined information as the decrease of uncertainty, which is used for the quantification of efficiency of communication. In this theory, information is being selected and transmitted by the system from one end to another. As Guzzo (1990: 30) pointed out, the central aspect of this transmission process is that "one message is selected from a group of possible messages" (Guizzo, 1999: 30.). Therefore, Shannon's information is also called selective information.

Since Shannon's focus was on the quantitative value in information, meaning is excluded from its definition. While this theory of information is important for engineering questions, it does not help much in understanding the semantic and influential aspects of information, and therefore it has received criticisms from other scholars of information theory. For instance, Von Foerster made this following critique on Shannon's definition of information:

> *I want to call the whole of what they called information theory signal theory, because information was not yet there. …. The moment one transforms that set of signals into other signals our brain can make an understanding of, the information is born (Cited in Gleick, 2011: 417).*

Although it is questionable to simplify Shannon's information as signals, as these two concepts have fundamental difference (Shannon and Weaver, 1959: 100), von Foerster's argument has its

merit in pointing out the importance of human subjectivity in communicative exchanges. Likewise, another information theorist, Mackay (1969) recommended that more attention should be paid to the semantic aspect of communication, and he developed the concept of structural information that is defined as "the change in a receiver's mind-set, and thus the meaning." Mackay's definition of information highlighted a central role of meaning, and therefore leads academic discussion of information to the semantic level.

Information discussed in the community of media and communication studies represents this kind of structural information – information with meaning. Referring back to Weaver's (1949) analysis of levels of communication process, Shannon's selective information theory aims to solve technical problems on the first level of communication, whereas structural information deals with the second level (semantic) and third level (influence) of the process. In the scholarship of mass media studies, more precisely audience studies, there is rich literature on the semantic and influential aspect of information. Media-effects studies in the 1960s and 1970s, for instance, emphasised the influential aspects of information and its meaning over receivers and the society. However, following a "cultural turn" (Hartley, 2012: 41) of studies of information or media text in general, attention of mass communication scholarship (associated with cultural studies) was brought to the semantic level of communication (Dahlgren, 1998). Since then, the focus of audience research had shifted from a cause-and-effect model of information transmission to questions regarding how meaning is constructed through audience's engagement with social contexts.

Media-effects studies and audience reception research (e.g., White, 1950; Galtung and Ruge, 1965; Carey, 1975; Jensen, 1990; Ang, 1991) have a lot to offer for studies examining information construction processes, given their intellectual vitality and their commitment to meaning. In the next section, this proposal draws theories from both traditions to demonstrate how the information construction process has been theorized in mass communication scholarship. The extent to which today's information making environment differs from that of a mass media era will then be explained. At the end of this section this proposal argues that the mass communication theories that have been introduced here are still holding their validity in a digital media environment.

2.2. How Does Information Come into Being

In the previous section it was discussed how information should be perceived differently depending on which level of communication it is situated. Following the same logic, this section is going to present how information making process has been theorized on different communication levels. On the first level of communication process, the main task of information transmission is selection, which means to choose a message from a group of messages (Guizzo, 1999), or to choose an event to present from a group of events (Wistley and McLean: 1957). Since this proposed study looks at information with meaning (i.e., structural information) for 'information' to be born there is another process it needs to go through: meaning making. It appears that from this understanding of information, its construction process can be broken into two steps: selection process and interpretation process. This process is summarised in table 2. In mass media scholarship, there is a

big body of literature dealing with these two problems, which this proposal will now discuss in detail.

Table 2

Levels in communication process	**Information construction process**	**Relevant theories/concepts**
Level 1	Certain contents become available through selection, which is either conducted by technology actors or human actors.	Shannon's information theories; Gatekeeping and New values;
Level 2	**Contents, which become available through the selection process, are interpreted by the receiver.**	**Interpretive communities**

2.2.1. Selection

As Table 2 details, on the first level of communication what content becomes available is selected; this is before the semantic level of communication where individuals can make sense of media content. In Weaver's (1949) original topology, this process is exclusively technical, looking at how information transferred through physical channels, and choices are made during this process. As Frick (1959) argued, it is the realization that every process of conveying information is a process of selection that leads to the development of information theory.

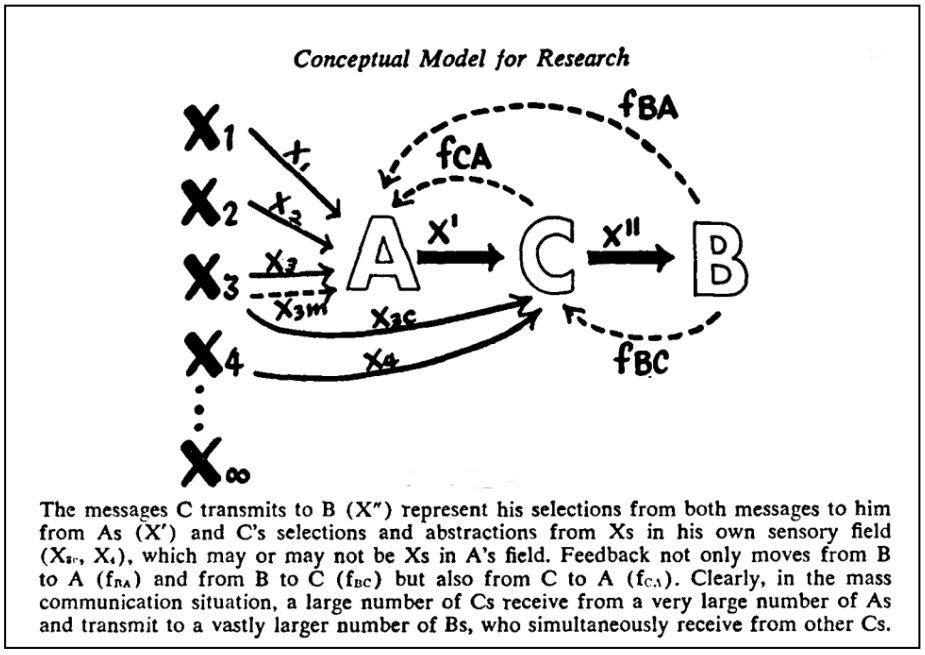
In Shannon's (1948) theory of information, for example, communication is assessed by the efficiency of transfer messages from sender to receiver through physical channels. This efficiency is largely determined by how choice is made to pick a message from a group of messages during the transmission process (ibid). Although this selection model is originally used for engineering problems of communication, a "Shannonian process of choice" can be applied to solve problems outside the realm of communication systems (Salthe, 2011: 420). For example, there is a rich literature examining questions surrounding information selection (McQuail, 2010: 70, 350).

The discussion of selection in media studies can be traced back to early news gatekeeping theories. From David Manning White (1950), the term 'gatekeeping' began as a metaphor to describe the information selection process in news organizations. White (ibid.) studied newspaper editors' news selection decision and concluded that the editor's choice of information is largely a result of their individual subjective opinion. While White's study pioneered academic study in the news selection process, his conclusion appeared to overestimate editor's agency over this selection decision and ignored wider social factors influencing the gatekeeping process. Westley and MacLean's (1957) influential model of mass communication presented an alternative explanation of news selection decision. In Westley and MacLean's model, as seen in figure 1, news

organization's (presented by C in the diagram) selection of information is influenced by feedbacks from audience, organizational power, and social system (all of them are represented as B).

Therefore, in accordance with this mass communication model, the selection of information made by media organizations does not only reflect audience's demand, but also power relation and social values.

Figure 1: Westley and MacLean's 1957: 35



The messages C transmits to B (X″) represent his selections from both messages to him from As (X′) and C's selections and abstractions from Xs in his own sensory field (X_{3c}, X_4), which may or may not be Xs in A's field. Feedback not only moves from B to A (f_{BA}) and from B to C (f_{BC}) but also from C to A (f_{CA}). Clearly, in the mass communication situation, a large number of Cs receive from a very large number of As and transmit to a vastly larger number of Bs, who simultaneously receive from other Cs.

While scholarship of gatekeeping theories is responsible for the trend of studying information selection decision (Shoemaker and Vos, 2004: 78), it is the arrival of news values studies that brought about a more theoretical explanation of factors that directly guide media organization's decision on information choice. MacQuail (2010:564) defines news values as criteria used by news organizations to decide if or not to carry a particular item of news. In their influential research of Norwegian media organization, Galtung and Ruge's (1965) posed the question: "How do 'events' become 'news'?" In order to answers this question, they identified twelve factors that affect news values of particular information, with a focus on social-cultural factors. As Galtung and Ruge (1965: 65) argued, "what we choose to consider as an 'event' is culturally determined". Or in other words, to make certain that media content make sense, there must be a cultural connection between the text and the audience.

2.2.2. Interpretation

As outlined in the previous section, for information to come into being certain content should be made available to the viewers, and key concepts on this process have already been introduced. After selection, the second step for information making is meaning construction. Theories of 'meaning' of media text will be drawn from mass media audience studies.

In media studies, there is a long history of discussing where meaning is from. Discussions surrounding issues of meaning making are centred by the tension between media power and audience interpretive freedom. In general, there are three approaches to meaning: meaning as determined by media, meaning as determined by audience, and meanings negotiated through the audience's engagement with social and cultural contexts.

The media-determinist perspective, from 1960s to 1970s, is widely deployed in media effects tradition and aims at analysing information's influence over its receivers and over society in general (McQuail, 2010). Meaning, in this case, is directly received by receivers like a 'magic bullet' (Sparks, 2012). This transmission model of information and meaning transfer provoked criticism from other media scholars who disagree with the media-determinist perception of communication. Canadian cultural studies scholar Carey (1975, 2008), for instance, suggested supplementing the transmission model of communication with a new emphasis of meaning and interpretation. He therefore, argued that communication should be viewed also as social ritual. Such a ritual view of communication focuses on the way in which meaning is socially generated based on a shared understanding and values (ibid.).

The arrival of Carey's (1975) 'ritual model' of communication represents a 'cultural turn' of mass media studies in the 1970s (Dahlgren, 1998: 55). This shifts focus in audience research from powerful media to active audience. The active audiences are those who engage with their social and cultural surroundings to make sense to media content. For instance, John Fiske argued "meanings only occur in the encounter between texts and subjects" (1986: 404). He looked at meaning of media text as 'structured polysemy' (1987: 65), emphasising openness of media texts to various interpretations. Fiske's research (ibid.) demonstrated how different social groups made different interpretations of the same media content, especially how alternative interpretations are made to resist the hegemonic reading. However, Fiske's analysis is criticized for its overemphasis on audience's agency in resisting dominant meaning. Dahlgren et al. (2008) and McRobbie (1996), for example, criticize this as 'hyperactive audience' whose eager and agency of exploring the interactive potential of TV has been overestimated. Similar critique was made on other audience-centred perception studies such as Hobson's (1989) and Seiter et al.'s (1989) study of female viewers, all of which emphasize how these women utilize soap operas to foster power and solidarity.

Lessons from media-determined and audience-centred views of the sense-making process, which has been reviewed briefly in the previous section, compel scholars in reception studies to find the balance between media power and audience's interpretive power. One possible solution to this would be to look into actual complexities in meaning-making and real communication processes (Dahlgre 1998:49), which will be discussed in detail.

Mass communication scholarship has tackled the problem of sense-making process from a variety of angles. Some researchers take an ethnographical approach to observe an audience's television experience in daily life (e.g., Morley 1989; Seiter, 1991; Ang, 1991), and others take qualitative textual analysis of media representation to explore meaning making from a discourse and semiology angle (e.g., Silverstone, 1981; Allen, 1992). However, most approaches share a

constructivist view that meaning is made through individuals' interaction with social context (Dahlfren, 1998; McQuail, 2010; Steward and Kowaltzke, 2007).

The social constructivist approach to meaning-making in media studies is largely influenced by European and American (Saussure, 1915; Peirce, 1991) scholarship of Semiotics. The basic ideal of such constructivist understanding of meaning is that texts do not have any fixed meaning, and meaning is only potential until it is contextualized in a certain situation. But how do individuals make choice from the "sea of social meanings" (Schroder 1994: 334), or how should texts be connected to an 'appropriate' meaning? These questions lead to the concepts of interpretive communities (Fish, 1980; Lindlof, 1988; Jensen, 1990; Schroder, 1994), an entity where individuals find rules of meaning making.

Interpretive community can be a powerful conceptual tool to study individuals' interpretive practices, because different from the determinist approaches introduced earlier, this framework stresses the social and constructivist aspect of meaning making of media texts. The concept of interpretive communities is originally developed by Stanley Fish (1980) in his book titled "Is there a Text in this Class". A central question Fish tried to answer in this work was "Is text or the reader the source of meaning?". (1980: 1). As his answer to this question, Fish (ibid) argued that neither text nor reader is the source of meaning, because meaning is produced in certain interpretive communities. According to Fish (1980:14) interpretive communities are made up of individuals sharing interpretive strategies, which exist prior to the act of interpretation. Following this logic, Fish argued, "readers' response is not to the meaning, it is the meaning" (1980:3). What Fish is pointing out here is that readers or other media consumers are not a free agency who produces meaning independently. Instead, their social relation shapes their interpretive practices, so everything they do in the interpretive community is part of their meaning experience.

Although Fish's work derives from the discipline of literary criticism, there are also plenty of discussions surrounding the concept of interpretive communities in the community of media studies. In media studies context, this concept is mostly used to explore how TV audiences make sense of media contents (e.g., Morley, 1980; Jensen, 1990; Schroder, 1994; Robinson and DeShano, 2011; Chu, 2011). Efforts to contextualize Fish's interpretive communities into media studies can be seen in Jensen's study of TV audience. Jensen (1987, 1990) drew this term of interpretive community to describe a certain entity that is characterized by its discursive modes of making sense of TV content. He asserted that meaning construction processes should always be understood with reference to "social and cultural networks that situate the individual views" (1987: 28). Jensen is suggesting that individuals find sources of codes that they can apply to interpret coded media content within social and cultural networks.

2.3. Information Construction in the Digital Environment

This proposal has reviewed theoretical discussions of information selection in mass communication studies; key concepts include gatekeeping and news values. Arguably, in this digital age, where the amount of information we have access to keeps growing, selection process becomes more relevant than ever, because our own capability to interpret information has not been

developed as fast as the volume of information (Andrejevic, 2013; Shenk, 1998). Like what Gleick (2011: 425) depicts: "We are informed by choice".

Shannon's (1948) information theory, as well as Westley and McLean's (1957) mass communication model, is based on a top-down transmission model of communication where message is transmitted linearly between the sender and receiver. By contrast, driven by the "participatory culture" (Jenkins, 2009), sender-and-receiver or producer-and-consumer dichotomy is replaced by what Bruns (2008) coined as "produsage". In this model (ibid.) of information making, participants contributing to content construction are both producer and consumer. Characteristics of such an interactive and collaborative information construction models have been summarised in Boczkowski's (2004: 143) discussion of "distributed construction" of information. In his case study of Community Connection - a website for a few NGOs to make their own site to publish information- Boczkowski's reasons that internet-based information production demonstrates a new regime of information, which has these following distinctive features: it "inscribes users as active co-constructors, centres the editorial function around the facilitation of content exchange, houses a multiplicity of information flow, and represents a heterarchic organizational structure" (2004: 163).

The collaboration in information construction is best demonstrated in participants' collective contextualization of web content. As Stonier (1997) pointed out, unorganized media contents can only be considered as disconnected facts and observations, and to become information, they need to be organized by sorting, selecting, and cross-referring. It is reasonable to argue that the demand for sorted and organized information is more relevant in the digital media environment, where content-production become open and hierarchic (Boczkowski, 2004), where it is not un-common to see users "feeling lost in the multitude of information available to them" (Bruns, 2005: 19). Although these studies listed above are over 10 years old, they still apply to today's social media environment. For instance, cross-platform tagging and linking are examples of collective actions of individuals' organizing of online content. On Twitter, for instance, hashtagging has been widely employed by individuals to organize web content into context collective. As Pesce (cited in Bruns, 2008: 173) pointed out, tagging let participants to assign semantic keywords to any web content, and these tags serve as an "envelope" of context for data that is isolated and meaningless. Liza Potts' (2014) case studies of social media use during crisis also demonstrate the significance of such collective action of cross-platform tagging in web data organizing.

As all of these examples illustrated, in this digital media environment how information is produced and sorted is significantly different from the mass communication context: It has shifted from an asymmetric one-way model to a collective and participatory model. This has great implications for research that examines information construction process. The two-step analysis of the information construction process, which consists of content production and interpretation, is premised on the independence between the content producer and the consumer. Content producer or editor takes the role of selecting what to be shown to the consumer, and then consumer makes sense of the content. When there is no longer any fixed line between producer and consumer, content production and meaning making blend. This interfusion between content production and meaning-making brings about both opportunities and challenges to researches

examining information construction issues. One the one hand, when users consciously engage in online content building, their response presents materialized form of their mind practice. This gives concrete clues/evidence for researchers to study interpretive practices. The challenge is that there is not ready to use theory to explain the new information-making process. This becomes an important goal this study will try to reach - to modify theories from the past to study new information construction process. This study will use the concept of interpretive community as the leading conceptual tool to examine digital information making process.

2.4. Continued Validity of Mass Communication Theories

As presented earlier, the concept of interpretive community has been applied widely in the discipline of reception studies from the 1980s and 1990s (Jensen, 1987; Morley, 1989; Lindlof, 1998), which focused on how meaning of media texts, especially TV content, is interpreted and negotiated by the audience. While some argue that 'audience' is already a yesterday concept (e.g., Gillmore, 2008; Rosen, 2006), user's engagement with digital media also echoes some key arguments made by reception studies scholars, such as active audience or a constructivist understanding of meaning of media texts.

Livingstone (2013) gives a detailed explanation on how concepts and repertoires from audience studies can be applied to new media contexts.

The inscribed users discussed by the latter remind us, as audience researchers, of sutured subjects; meanwhile, implied users echo implied audiences and ideal readers; the semiotics of links and nodes parallel the polysemy of TV dual codes; technological affordances resemble preferred readings; communities of practice expand on interpretive communities; remix cultures extend recognition of playful or resistant readers; and in both new and old media contexts, notions of genre organize texts and usage-reading practices (2013: 115).

In today's literature on digital media, there is no lack of evidence that support Livingstone's assertion. Taking the concept of interpretive community from audience reception studies as an example, in the online context, Robinson and DeShano (2011) apply the framework of interpretive community to study blog-based collective interpretation. Likewise, Chu's (2011) case study of journalist bloggers also uses this concept to study meaning-making in the online environment. Chu finds that journalists use this online space as new form of interpretive community where they share narratives and make sense of professional ideology. There is other literature that does not draw direct connection to interpretive community, but also show evidence of expanded interpretive community to online context. Bruns' (2008) discussion of online "communal evaluation", Shirky's (2008) "aggregated judgments", as well as Bowman and Willis' (2003) discussion of "self-correction mechanism" of digital media platform are all cases in point. More recent studies of collaborative curation (Meraz and Papacharissi, 2013) or social curation (Duh et al.,2012; Hall and Zarro, 2012) practices on social media, like users' voting practice to rank web content, also indicate the extension of interpretive community in social media context.

While these examples illustrate that the concept of interpretive communities is still valid in today's social media context, it is arguable that the digital media environment can be a more appropriate environment to study interpretive community than the mass communication model; and at the same time interpretive community has the potential to be an effective tool to study new media-based communications.

In the first place, digital media makes it possible to capture multiple social relations at once. Ang (1991:55) warned that the social relations of audiences consist of an "infinite and ever expanding myriad of dispersed practices and experiences". This suggests that one major methodological challenge to study interpretive communities in mass media contexts is to capture the multiplicity of social communities. Focus groups were used as the dominant methods of mass audience reception scholars to study this issue (e.g., Morley, 1980; Radway, 1984; Jensen, 1990). Similar to Ang's critique, Schroder (1994) argued that such methods can only uncover certain, often very limited, types of social relations' impact on people's interpretive practices. For instance, Jensen's (1987) focus group study of young and old people's interpretation of TV content, covered merely social groups that bounded by age.

As new communication technologies keeps penetrating into people's everyday lives, Deuze asserts that "we are now living in a media life" (2007: 242). A "media life" can be understood as a condition where media and social reality are so converged that to live becomes a social-technical experience. The relation between people's social network use and their social relations is a case in this point: one's online social relations are not merely a reflection of off-line social life but an extension of it. In other words, the web may be considered as intersections of people's various social relations. Social relations that mass media scholars used to study separately - Morley's (1980) family group, Rahway's (1984) romance novel community, Fiske's (1986) subculture group, Jenken's (1987) young people group – can now be aggregated on one's social media.

In the second place, digital media makes it easy to trace users' interpreting activities. Referring back to my discussion of interpretive communities in section 2.2, a key point major theorists of this concept tried to make was: audience's "response is meaning" (Fish, 1980), or "behaviour is meaning" (Lindlof, 1988). Because in digital media contexts, individuals are actively engaged in the collaborative content production, their content production is a product of their interpretation, already. The blurred line between media text producer and consumer on social media means that one can examine a media user's interpreting practice, which is normally an intangible mind-practice, through analysing their concrete traceable communicative activities on the web. In the case of Twitter, such traceable communicative activities can be exemplified by a user's practices of retweeting or replying.

To sum up, key concepts and theories that can be used to understand what information is and how it is constructed have been introduced in this section. It has also been argued that although the digital media environment has its specific characteristics, the concept of interpretive community may still be used to study today's information construction process on social media, which is the focus of this proposed study.

3. Microblogs

3.1. Collaborative Information Construction during Acute Events

The rapid adoption of micro-blogs in crisis communication has been followed by precipitous growth of studies on this topic. Academics have found how individuals use microblgging, and social media in general, for variety of reason, such as emotional support (Sutton et al. 2008, Perng et al. 2012), or to maintain a sense of community (Reynolds and Seeger 2012; Lev-On 2011). Among these motivations, the search for and to share information, especially timely information, are the primary factors driving people to use micro-blogs during acute events.

As having been discussed in section 2, the information construction process in the digital contexts features a collaborative model. During crisis situations, such collaborative practices are even more obvious. For instance, the contribution of social media in aiding emergency managements department to disseminate information has been well studied in the existing literature. Bruns, Burgess, Crawford, and Shaw (2012), as well as Duffy (2012), investigate the Queensland Police Service's adoption of Twitter and Facebook in 2011 Queensland floods, showing the significant role played by social media in helping QPS spread situational information and official guidance to a wide audience. Similar work has been done by Procter et al. (2013) who analysed tweets posted during the 2011 UK riots to demonstrate the ways the police used Twitter to engage with other groups to coordinate the clean-up after the riots.

Besides government institutions' involvement in information construction on micro-blogs during acute events, the general public appear to be an equally important force contributing to crisis information on social media. Researchers have reported a virtually instantaneous spike on micro-blogs in response to a crisis made by general publics, while government institution and traditional media organisations lag behind. For example, after the 2008 Sichuan earthquake, first reports about this disaster were published by individual Twitter users (Mills et al. 2009). Similarly, Keego's (2013) study of 2011 Great East Japan Earthquake also documented that when traditional media broke down, and the Web became the primary means to obtain information. Some other studies also explore the public's sharing of information to organise emergency relief and ongoing assistance efforts. Gao et al's study (2011), for example, documented how the affected deploy social media to make their needs heard after disasters strikes. In the comparative study of the role of Twitter in QLD flood and Christchurch Earthquake, Bruns and Burgess (2014) highlight the coordinating function of Twitter and point out that effective use social media can help the affected to reach attention and form an ad hoc public around the emergency events. Starbird and Palen (2011) coined the term "voluntweeters" to describe people using Twitter information to get involved in disaster relief efforts.

3.2. Information Verification

The widespread use of social media in emergency situations has triggered concerns among emergency organisations and researchers that social media enables the rapid spread of rumours and misinformation, which may lead to serious consequences in crisis circumstances. Researchers

have looked into factors affecting information consumers' perceptions regarding content credibility as well as their information sharing behaviours. Morris et al. (2012) looked at how content and user profiles affected audience verification of information credibility through a large-scale survey study. Tan et al. (2014) investigated how wording can affect the audience's perception of information quality on social media. Shi and Whinston (2014) examined how tie strength moderates information sharing behaviours on Twitter, and found that information from weak ties is more likely to be shared on Twitter.

Apart from these user-centred studies on information credibility issues, other researchers work on technical solutions to this problem. For instance, there are plenty of scholars working on technologies that can be applied to automatically assess information quality and detect rumours in crisis situations. Castillo et al. (2011) studied the dissemination of information on Twitter in the 2010 earthquake in Chile and concluded that online rumours have certain features: URLs tend to be positively correlated with non-credible news, tweets which include negative sentiment words are positively correlated with credible news. Furthermore, Gupta et al. (2012) have identified 50 variables that indicate information quality. Likewise, Procter and colleagues' (2013) later study of Twitter use in London riots suggested a common lifecycle of rumours in emergency situations. Notably, similar research has been done with Weibo posts. Based on earlier studies on rumour detection, Yang et al. (2012) conducted a rumour analysis on Weibo, and identify certain new features, such as location or devices, that work effectively to identify false information in the Chinese Weibo-sphere.

Although prior studies on technical solutions have promise for the evaluation of social media content, at this stage it is equally, if not more, important to look into the dynamics underneath the surface: to explore how crisis information comes into being and how information is interpreted in the first place. As mentioned before, web-based communicative community have the potential to serve as a site where members assess and verify information collaboratively (Bowman and Willis, 2003; Bruns, 2008; Shirky, 2008). Therefore, besides technology solution, more effort should be made to study human-actor's agency to collect, filter, and evaluate information. What is more, it is arguable that a better understanding of how information is selected and interpreted by human-actors will also benefit the future development of automatic information quality detection tools.

To study how information is constructed and how meaning comes into being, this research rejects an information-as-objective point of view. Like Shannon (cited in Gleick, 2011) famously declared, "meaning is irrelevant to the engineering problem"—that is, human psychology and subjectivity have long been neglected in the information science community. However, from a media and communication studies perspective, only after being received, interpreted and validated by the humans, can signal/content be called information (von Foerster.1952; Mackay, 1969; Potts 2013). While an objective perception of information may be appropriate for information science perspective, to view information quality as a perceptual and subjective variable accommodates my research task—to explore the collaborative, conflictual and constructed aspects of the communication exchange process. Such an information-as-subjective point of view is especially relevant to a situation where there is a huge volume of information. In tandem with information abundance comes an increasing sense of an absence of meaning (Dupuy, cited in

Gleick 2011) and increasing difficulty in making sense from the "infoglut" (Andrejevic 2013). As concluded by Gleick (2011 p.419) "as ever, it is the choice that informs us", and this "choice" is not necessarily by information consumers themselves, but could be made by traditional media agencies (White & Fu 2012), government agencies (Fu 2012), or the algorithms (Gillespie 2014).

4. Research Objectives and Questions

The overarching objective of research is to analyse how information around acute events comes into being. As my earlier review of theories of information construction issues indicates, the information that comes into being consists of two parts, these being information selection and interpretation. However, driven by the collaborative culture on the web, these two processes become increasingly blended, and therefore most theories that examine these two problems separately can no longer be used to detect and explain new dynamics in the information making process. Having argued before, however, the concept of interpretive communities has the potential to serve as a new framework to analyse the process through which information comes into being in social media contexts. This study will first investigate if interpretive communities exist in social media-based communication. If so, this research will further study how interpretive communities shape the process through which information comes into being on micro-blogs during acute events.

Interpretive community has been widely used in audience reception studies, and it has been defined by media study scholars (Jensen, 1987; Lindlof, 1998) as a site where members share and develop interpretive practices, which raises premises of their understanding of media contents. Given that the mass communication contexts are significantly different from social media contexts (as discussed in section 2.3), the properties of offline interpretive communities may exist in different formats. The first question this study will try to answer is:

4.1. RQ1: What is the Key Criteria of Interpretive Communities in Digital Media Contexts?

Findings of the first research question will serve as guidelines when this study looks into micro-blog users' interpreting activities, which is the focus of my second research question. It has been explained earlier that in a mass communication model, where there is a clear line between content producer and receiver, information is constructed through content selection (step 1) on the producer side and meaning making (step 2) on the receiver side. By contrast, the web-based information construction process is characterized by a produsage model (Bruns, 2008), where participants contributing to content construction are both producer and consumer. In this model, user's practice of content selection itself becomes part of the meaning-making experience. For example, when micro-blog users retweet, they are contributing to the production side of information, but at the same time, the action itself is already the product of interpretation. This is why this proposal uses the micro-blogging community as the context to study how both information and its meaning come into being.

More than two decades ago, Lindlof (1988) had already discussed the existence of interpretive communities in virtual contexts. In Lindlof's (1988) early analysis of computer bulletin boards, he argued that members of such virtual groups can be considered as interpretive communities because of their commitment to "standard protocols, speech acts, and other conventions" (Lindlof, 1998: 93). Following this logic, if interpretive communities do exist on micro-blogs, their features, such as hashtags, mention, URLs, reposts etc. can also be considered as such rules that regulate and shape its members' interpreting activities. For this reason, to understand micro-blog users' interpretive activities is to understand the process of how information comes into being. The second research question is: RQ2 What are the information selection and interpreting activities in the context of micro-blogging, and what is their impact on information construction process?

5. Research Design

5.1. Cases Selection

This study will focus on acute events, which Burgess and Crawford (2011) defined as significant events associated with intense bursts in media activity – from natural disaster to celebrity's death, from royal weddings to presidential elections. Cases used in this study should meet following criteria:

- Rapidly developing. For very practical reason, rapid developing events are preferred because it is less cost-effective to follow events that last over a long time-span. Given the fact that micro-blogs are event-driven media (Murthy, 2013), it is expected that these events reach sharp peaks of high volume and intensity. Such features make it more likely to aggregate a high volume of data within a short period of time.
- Significant. The events should be widely perceived as being significant enough to get multiple and diverse actors involved. For example, crises can attract attention from entities from the government, media industry, and general public.
- Also, such events should be highly mediated, generating more cross-platform flow of information. In high-pressure events, participants use multiple systems to search for/disseminate information. To trace information movement across different media platforms helps researchers develop better knowledge of communication in the media ecology as whole.

Based on these criteria, crisis events are targeted for my proposed study. Panic and chaos in crisis bring about stronger signals that provide more material to demonstrate the significance of people's collaborative sense-making activates. Moreover, the consequence of ineffective communication during times of crisis can be serious, which makes crisis cases more worth studying.

5.2. Micro-Blog Data Collection

There are two common ways to gather data from micro-blogs: web crawling and Application Programming Interface (API). This study will use the API data gathering methods only, because so

far this is the most common data mining method for academic researchers. Also, API is more reliable, and (presumably) more compatible with the terms of use of social media platforms.

As researchers familiar with Twitter data collection may already know, Twitter offers three types of APIs: 1. the Streaming API that provides a continuing stream of new posts matching the criteria the researcher set, delivered via the API as soon as they become available; 2. the Search API, which can retrieve historical tweets; 3. REST API that provides programmatic access to author new posts and to read a user's profile and timeline and more. The structure of Weibo API is very different from that of Twitter. Sina API provides around 150 methods for data interaction, which are only partially open to the public. Depending on the content of queries, Weibo categorized them into 16 groups, among which Timeline API, Comments API, User profile API, Relationship API are mostly commonly used for academic studies.

Topic hashtags will be used to collect relevant data of particular acute events. Hashtags are first introduced on Twitter, it is a user-generated mechanism to tag and collate tweets, which are under a specific topic. Users include hashtags in their posts to mark them as addressing particular themes. By following and posting to a hashtag conversation, Twitter users can communicate with a community of interest around the hashtag topic without establishing a mutual following relationship with other participants. Weibo launched its own hashtag feature, but are both preceded and followed by "#". In Figure 9.1 is an example of hashtag page on Weibo.

In their study of #qldfloods and #eqnz, Bruns et al. (2012) argue topic hashtags should be distinguished from non-topic hashtags, because they function differently and have different affordance. The former helps researchers to capture most visible posts relevant to the topic. As they further explain, although not all relevant posts include topic hashtags, researchers can use topic hashtags to capture most visible posts relevant to the events, because the principal purpose of using topic hashtags is to amplify the discoverability and visibility of posts (Bruns and Burgess, 2015).

5.3. Analytical Methods

This study will employ "standard micro-blog metrics" developed from inside social media research communities (e.g., Burgess and Bruns, 2012; Bruns and Stieglitz 2013, Bruns and Stieglitz, 2014). For example, Bruns and Stieglitz's (2013) catalogue of standardised metrics for analyzing the communicative patterns: user activity metrics, user visibility metrics, temporal metrics, and mixed metrics. Details of these terms will be introduced in the following discussion of my analytical methods. These standardised metrics can not only help researchers to systematically and effectively study microblog data, but also help to generate more cumulative and comparative findings (Burgess and Bruns, 2013). Given the comparative aspect of this proposed study, to generate cumulative and comparative data is essential. However, only quantitative analysis is not enough to answer my research questions. Because the emphasis of this study is on sense-making and meaning-generating aspect of information, it is essential to combine quantitative analysis with a close qualitative analysis of micro-blog texts. Next section will turn now to explain how micro-

blog data metrics and textual analysis can work together to generate insights of users interpreting activities.

5.3.1. Controversy

Conducting content analysis to find out what is being talked about and shared around an acute event on micro-blog is the first step. By doing so, the most controversial topics can be spotted. There are three major reasons why this study will pay special attention to controversies.

In this first place, controversies make the multiplicity of actors involved in the information construction process more visible. As discussed earlier, information construction is collaborative, controversies are moments where collaboration is most visible. As existing studies (e.g., Venturini, 2010; Callon et al., 2010) have shown, controversial issues are ideal sites to study issues involving multiple actors, because disputes and uncertainty bring individuals associated with the issue to the scene.

Moreover, besides its effect to make multiple actors more visible, controversies also render alliances and opposition more identifiable. As the earlier review of theories of interpretive communities suggests, a key character of an interpretive communities is a shared pattern of interpretation of media contents among its members (Fish, 1970; Dorfman, 1996). Members from the same interpretive community should have shared interpretive patterns; by contrast, different communities should have different interpretation regarding the same media text. It is relatively easy to identify such common patter of understanding and disputes in controversial situations. Like Callon et al. (2010: 28) assert, multiplicity of actors and conflicts it caused can be revealed as controversy develops and therefore making complex situations intelligible.

Also, controversies make it easier to uncover contesting power relations and competition with in an interpretive community. As introduced in section 2.2, the shared interpretive pattern in an interpretive community is not fixed, but is an effect of an on-going negotiation among members in the group. To uncover the process through which the interpretation of certain information becomes stable, disagreement and disputes are needed. And controversies can serve to foster diversified interpretations inside an interpretive community.

Controversies can be found through two steps. First, a quantitative thematic analysis needs to be conducted with the acute event's hashtag corpus, such as the #sydneysiege dataset that will be used to pilot my study. By doing so, the most discussed themes can be identified. Since most discussed topics are not necessarily controversial issues, it is necessary to further analyse the degree of controversy of these topics. For instance, if the finding from the thematic analysis indicates that the most discussed topics in #sydneysiege corpus are: "flag", "gunman", "hostage", and "police". The degree of dispute of these four topics can be indicated by the number of participants involved in the discussion, and the variety of opinions. These topics are first selected based on the number of posts related to them, but when it comes to the score of controversy, it is also important to count the number of users contributing to the discussion. The level of controversy can be also indicated by the degree of diversity in people's response to the topic, and

this can be studied through a close textual analysis. The more controversial it is, the more diversified people's interpretation should be. By doing so, users with a similar interpretation can be put in a cluster. This is also preparation for later analysis of interpretation-based group metrics, which will be used to identify different communication patterns for different interpretive groups.

Examining controversies in microblog-based communication is important for further analysis of user' discursive activities and interpretive patterns. Controversies are venues where interpretation activities are most visible and signals of discursive practices are strongest. The next section explains why and how microblog users' activities should be studied to understand their interpretive practices as well as information construction activities.

5.3.2. Interaction

After explaining the rational of examining interaction between participants of hashtag discussion, how interactive practices can be studied through analysis of user activity metrics will be introduced. User's activity metrics include numbers of original posts, reposts, and replies (Bruns and Stieglitz, 2013).

Referring back to my discussion of interpretive communities in section 2.2, an important aspect of interpretive activities that has been emphasised by a few theorists was: audience's "response is not to meaning, it is meaning" (Fish, 1980), or "behaviour is meaning" (Lindlof, 1988). This action-as-meaning perspective fits into this study, which examines information making on social media where "produsers" (Bruns, 2008) produce content while interpreting and make-sense while contributing. In the context of micro-blogs, users' major activities include posting original content, share other's posts, replies to others, and import content from external source. Based on this, basic metrics to evaluate and compare user activities include number of posts, @mention that cover replies and repost, and URL usage.

To begin with, how members of interpretive groups interact act with each other to make sense of issues and to contribute to the information construction can be studied through analysing user's replies and reposts activities. Posts from the corpus of a particular acute event can be categorized into three groups, these being original post (posts that does not include @ mention symbol), reposted micro-blogs (posts with RT@ and original posts), and replies (posts with @username). By counting the total number of replies and reposts, the degree of interactivity in the discussion can be revealed. Moreover, group metrics of users' replies and reposts activities also give useful finding when analysing between two clusters of different social groups. Details how users in the corpus can be clustered based on their interpretation of certain media content have been discussed in section 5.3.1. Groups can also be identified through pre-existing associations. For example, with Weibo data on can categorized posts according to the user's age/occupation/location … Sine Weibo API returns data with richer demographic information of its users, group metrics that aggregate members' activities can help compare interaction patterns between different demographic groups.

Interactivity is an important criterion to assess if an interpretive group can be called as interpretive community. Although it is common to the term "community" as been associated with users' participation in discussion Twitter in existing literature (e.g., Java et al., 2009; Smith et al., 2014), Bruns and Burgess (2015:12) point out that the use of same topic hashtag in the posts does not necessarily lead to interactions between participants in this hashtags. Although not all studies of "communities" on microblog should emphasize the degree of interactivity, the research objective of this proposal determines that an analysis of genuine interaction should be placed on the agenda. Only when there is enough indicating interaction in its members' interactions can a certain social group be identified as interpretive communities.

5.3.3. Information Selection – URLs

Information construction consists of content selection and interpretation, which has been discussed in section 2.2. In mass communication model, these two processes take place separately: one at the producer-end, the other at the consumer-end. By contrast, the information construction process on social media is characterized by a collaborative production model, where users are both information producer and consumer. For this reason, interpretive community is no long merely the venue where information's meaning comes in to being. It is now a site where content is selected, located, and interpreted. To study how participants locate and share content is an important part of my study of information making process. This study will conduct URL analysis to examine what kind of information around the event has been imported to micro-blog, and how these contents have been contextualized and interpreted.

URL is short for Uniform Resource Locator, which is used as a web address that leads to a specific webpage. URLs in micro-blog post serve to lead readers to contents that are outside of microblog. This feature enables microblog posts to overcome its 140-character restriction and offers a richer source of variation (Wu et al. 2011). This partially explains why URLs have been widely used on both Weibo and Twitter. It is worth pointing out that, Bruns et al.'s (2012) study of the Queensland Floods found that during critical events, the proportion of URL usage is particularly high in microblog-based communications.

A variety of findings can be generated through analysing different URL metrics. First of all, the most basic metrics of URL usage is a simple count of posts that contains the same URL. How frequent a piece of information is shared on micro-blog to a certain degree indicates how authoritative people think the source is. For example, Bruns et al.'s (2012) URLs analysis of Twitter posts during natural disasters reveals that traditional media organizations and government agencies are still dominant source of information in crisis situations.

Such quantitative analysis of URLs should be supplemented by qualitative analysis of the content in the URLs. Qualitative analysis of the URL usage can help to find out how the same piece of information from the same URL may be interpreted differently from individual to individual, from community to community. To study different interpretation of content from a particular URL on an individual level, one can conduct content analysis of posts with this URL and code those posts by the way information from this URL is interpreted. Findings from this can

answer questions like "What is the dominant reading of this information in this corpus?" and "What are the major contesting readings?" Moreover, the evolution of such contention can also be uncovered when URL metrics is combined with temporal metrics. Temporal metrics refers to metrics that emerge from breaking-down the given dataset by time (Bruns and Stieglitz, 2013). This type of metrics can be used to illustrate how users' communicate patterns change over time. For example, by combining temporal metrics with metrics of URLs, such as the proportion between two oppositional readings of content in this URL, one can observe how the interpretation is settled and how the dominant reading is emerging.

5.3.4. Influential Participants

As discussed in section 2.2, in mass communication contexts, both information selection practices and interpreting activities reflect power relations. In digital media contexts, both processes become a collaborative model, which involve a wide variety of participants. However, collaboration does not necessarily lead to an even distribution of power, because there may still be actors with more impact over the information construction process. For this reason, this study will also use data on micro-blog users activities to identify influential actors.

This study will measure participants' influence through an analysis of visibility metrics. There are different arguments on metrics of one's visibility in micro-blog based communication. Cha et al. (2010) propose three key measures, these being (1) indegree influence that is indicated by the number of followers; (2) Retweet influence, measured through the number of retweets one receives, and (3) Mention influence, which can be measured by the mentions containing this user's name. However, Bruns and Stieglitz's (2013) version of visibility metrics exclude the first measure of the number of followers. As they argue, the repost and reply numbers indicate the extent to which a post has been taken note (ibid). This research takes Bruns and Stieglitz's (2013) metrics rather than Cha et al.'s (2010), because the former emphasises real engagement with the posts. Because this research aims to study micro-blog users' active and cautious participation in information construction as a community, it is those who take actual action to engage with micro-blog content that should be studied. Even though the number of follower a user has does suggest how likely a certain post can be viewed, if his audience has no reaction to it (reply or repost), such an influence generated by the side of audience does not have any effect on the information construction process. For these reasons, Bruns and Stieglitz's (2013) evaluation metrics are more suitable for this research.

Whereas these visibility metrics can be used to quantify to what extent one's posts can receive other's response, it tells us little about the real impact of such visibility. When assessing one's influence in an interpretive community, it is essential to look at to what extent he/she has impact over the authoritative reading of media contexts. This is because interpretive activities are a "matter of persuasion" rather than a "matter of demonstration" (Fish, 1980: 16). As discussed in section 2.2, even inside the same interpretive community there are still contesting interpretations, and members may try to present their interpretations as the authoritative reading of the text. For this reason, the following methods will be suited to test these "influential" users real impact over the authoritative interpretation shared by a whole community. First of all, a list of influential users

needs to be identified, based on findings from analysing visibility metrics. Second, users' activities metrics (posts, reposts, and replies) will be combined with temporal metrics. This combined metrics will demonstrate those "influential" user's activities over time. Then, the timeline generated from these mixed metrics should be compared to the timeline that shows the evolvement of dominant interpretation of various controversial issues, which has already been discussed in section 5.3.1. If there is a correlation between the turning point of the dominant interpretation of a particular issue, and these influential users' activities, then we can conclude that these most visible users do have impacts on the communities' interpretation of media content.

6. Conclusion

This proposed study aims to analyse how information around acute events is constructed on microblogs. The first part of the document has critically discussed definitions of information and mass communication theories that have been used to study how information comes into being. Because, in this proposal, information is defined as organized data with meaning that is socially constructed, the process through which information comes into being can therefore been broken down into (1) content production and organization, and (2) interpretation. In a mass communication model, these two processes take place independently: the former is conducted mainly by media organisations, while the latter happens on the side of the consumer.

However, it has been argued that in digital media contexts any attempt to make a clear differentiation between these two processes becomes problematic, because media consumers are at the same time media content producers. To study how information is constructed in this new media environment, this proposal has discussed the potential of the concept of interpretive communication to help understand this new model of information-making. Interpretive communities have been widely used to study how TV audiences make sense of media texts in a certain social group in the 1980s and 1990s, but evidence of the continued validity of this concept from existing literature has been presented.

This research will look at information-making issues during critical events only, mainly because of their potential to amplify signals of microblog users' communicative activities. This microblog research is not limited to Twitter, but will also take Weibo into consideration, since the latter is the second most commonly used micro-blogging site in the world. A comparative perspective like this can generate more context-sensitive findings on how information around acute events is selected and interpreted on micro-blogs.

It has been discussed how data from Twitter and Weibo will be collected from API through topic hashtags. This proposal also explains how the geopolitical and technical contexts of micro-blogs in China make the technical barriers to accessing Weibo data particularly high. In terms of data analysis, it is proposed to have a mixed methodology that combines quantitative social media analysis and close qualitative textual analysis. The former involves quantitative analysis of standard microblog metrics, such as hashtag analysis, user analysis, and URL analysis. Quantitative findings can give important indications of the general interaction patterns among

members. Furthermore, to examine the context of users' interaction with information and with each other, qualitative analysis will also be employed. Textual analysis of micro-blog contents will give important insights into how information around critical events is contextualized and interpreted on microblogs.

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