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Protests against #delhigangrape on Twitter: Analyzing India's Arab Spring

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Abstract: *This study offers a comprehensive approach towards analyzing and explaining the role of Twitter in shaping and facilitating social movements especially during protests. It presents automatic and manual analyses of the tweet themes, usage characteristics and major Twitter users during a public outcry against a gangrape incident in Delhi, the capital city of India. Our results identified Twitter as an important channel for the diffusion of ideas and news among a vast set of adopters in defiance of geographical boundaries. Results of the content analyses highlight the prominent use of social media resources in disseminating information on Twitter, and the remarkable role of Twitter users as citizen journalists during the days of the protest. Results of the social network analysis suggest that major role players on Twitter were the offline protest leaders.*

Keywords: Twitter; protest; social movement; information dissemination; citizen journalism; protest reporting

Social movements are organized, informal social entities which engage in extra-institutional conflict towards a common goal (Della Porta & Diani, 2006). With recent advancements in technology and communication, the course and characteristics of social movements have transformed - present age social movement activists have integrated the new technologies into their organizing and into their very claim making performances (Tilly, 2005). The most notable influence on social movements has been rise of the Internet in the early 1990s, when the world witnessed a network population growth from the "low millions to the low billions" (Shirky, 2011). A popular activity online is the creation and exchange of user-generated content, also known as *social media,* on social networking websites such as Facebook and Twitter (Kaplan & Haenlein, 2010). Today, social media is a lifeline connecting citizens, activists, governmental and non-governmental actors worldwide. It has changed the face of social events and revolutionary uprisings in our societies.

India, the most populous democracy, has one of the lowest Internet penetrations in the world with only 11.4% (IAMAI, 2013). A country with a population of 1.24 billion (World Health Organization, 2011); it has 66 million social media users (Economic Times, 1 April 2013). In December 2012, social media in India became the hotbed of public agitation which ultimately spilled into the streets as mass demonstrations and protests. The outrage was against the brutal rape of a 23-year old female student in New Delhi, the capital city of India. The country witnessed a new unifying force which swept through the nation; the new force to reckon with, was social media and it was at the heart of India's very own Arab Spring (Zakaria, 2012).

Several parallels have been drawn between the revolts in the Arab countries and the 2012 protest in Delhi against a gangrape (Gayathri, 2013; Zakaria, 2012) – firstly, both shared a common cause of protesting against a corrupt and ineffectual leadership. In the case of the anti-gangrape protest in India, the protesters demanded that the police and courts should function properly so that accused could be prosecuted in the manner required by law. Secondly, both were popular revolts, fueled by an emerging middle class of educated youths who were frustrated with the

inefficacies of their government. In India, the Indian urban population is now a force to reckon with at middle class is now a force to reckon with at 420 million strong, of which more than half belong to the upcoming middle class. Thirdly, in both protests, social media was widely used by the activists and the general public who participated in the protest. However, despite these common themes, we believe the Indian society is unusual from the societies of countries which have been the focus of previous studies, where mass public protests were complemented with widespread social media penetration and participation. In India, the relationship of the offline protests with the online agitation on Twitter is a more promising aspect and an interesting relationship to investigate.

Twitter, the micro-blogging social media service with 140 characters a message, was a powerful tool for social movements, as evident during the recent Arab Spring (Papacharissi & de Fatima Oliveira, 2012), the 2011 riots in Britain (Kirkpatrick & Afify, 2011), protests at G20 meeting (Ems, 2010) and protests in Iran (Burns & Eltham, 2009). However the use of Twitter in a social movement in a society like India is yet to be explored. Hence, this exploratory study will analyze the use of Twitter during the movement against the Delhi gangrape with an aim to understand the usage characteristics of the medium during this movement and specifically during protest days. For analysis, this study collected 104059 tweets concerning Delhi gangrape, during the time period beginning with the news outbreak about the gangrape and ending with the police booking the accused for murder charges after the death of the victim. The Delhi gangrape protests make an interesting case study to analyze the use of Twitter because for the first time in India's new information communication technologies (ICTs) environment Twitter was extensively used during major protests, allowing a small, but growing part of the Indian public to transform India's 'public sphere' thereby triggering India's Arab Spring.

Scholars have investigated how social media is contributing to social movements (Segerberg & Bennett, 2011; Skoric et al., 2011; Van De Donk et. al., 2004; Diani, 2000). We witnessed how social media drove popular uprisings against long-standing regimes in the Middle East and North Africa (MENA) and resulted in toppling of Hosni Mubarak, Ben Ali and Muammar Gaddafi (Anderson, 2011; Howard et al., 2011). These uprising have been referred to as "Twitter" and "Facebook Revolutions" (Rane & Salem, 2012). Recent academic research examined the role of social media in uprisings and revolutions and revealed how they played central facilitation roles in expressions of inter and intra-group communication and information dissemination (Tufekci & Wilson, 2012). A few studies claimed social media to be a disruptive tool to these movements (Adey et al., 2010; Howard, 2010) while others believed it to be an important communication platform (Howard & Parks, 2012; Eltantawy & Wiest, 2011).

The conception of a social movement is closely linked to the recognition of protests (Oliver, 1998). Protests, inspired and instrumented by social activists, serve as an expression of objection by words and actions, against policies, situations or governments drive social movements. Social media has transformed the social movement communication landscape for the ways in which activists can communicate, collaborate and demonstrate. Today, in a social media environment with massive outreach and high participation, activists are able to communicate and unite in a crisis, proclaim a call to protest and undertake collective action in a short span of time.

During the last decade scholars have investigated the relationship between protests and the usage of new ICTs with a focus on the usage of these technologies before or after offline protest events or how these technologies drive for offline protests (Earl et al, 2013). However how these technologies are used **during** the protest events are yet to be explored. Similarly, there have been number of studies exploring the usage of Twitter in social movements such as the Arab uprisings; however, as with protest and ICT research, few of them have focused on Twitter use **during** protest events (Earl et al, 2013).

In summary, what has been missing in previous perspectives is an understanding of the role of social media during protests and the use of social media as events unfold in real time. This exploratory study contributes to existing literature by exploring a set of research questions to understand the usage of Twitter (social media) during a social movement, with an emphasis on protest events, thereby helping build a theory toward the characteristic use of Twitter during such

protest events. It will specifically look at the characteristics of Twitter usage such as main keywords, themes and types of media resources which were shared, and the major role players who led the online social movement.

1. Twitter and Protests

Previous research on Twitter has explored a broad array of questions: studies have investigated how information breaks on Twitter (e.g. Kwak et al, 2010) and is carried into mainstream media (e.g. van der Zee, 2009); how Twitter is used during emergency events (e.g. Berger, 2009; Hughes & Palen, 2009) or educational activities (e.g. Grosseck & Holotescu, 2008) or by politicians (e.g. Grant et.al. 2010) and journalists (e.g. Ahmad, 2010). Studies have also explored relationships between Twitter and elections (e.g. Tumasjan et.al, 2010;Skoric et al, 2012) and public diplomacy (Burns & Eltham, 2009) amongst other topics. However, studies exploring relationships between Twitter use and protests have been very few (see Burns & Eltham, 2009; Ems, 2010; Harlow & Johnson, 2011; Bajpai & Jaiswal, 2011; Tufekci & Wilson, 2012; Earl et al., 2013). The studies which have explored the use of Twitter for social movements are limited in their approach and have not focused on usage during protests, in order to build towards a theory of Twitter usage during crisis situations.

Burns and Eltham (2009) studied Twitter's role in Iran's 2009 election crisis but did not focus on the protests and their evidence lacks key primary data. Ems (2010) partly studied the G-20 protests in Pittsburgh but he examined the media coverage of Twitter usage rather than the tweets. Harlow and Johnson (2011) investigated the protest paradigm found in mainstream media versus social media, Twitter, but analyzed the tweets of only one user; however, the usage patterns of a single user may not be generalizable to all or any Twitter users. Bajpai and Jaiswal (2011) presented a content analysis of tweets from a protest in Thailand; however, their content analysis is not based on any theoretical perspective and it is hard to infer a general Twitter usage framework from their findings.

Tufekci and Wilson (2012) presented one of the key studies in understanding the relationship between social media and protests by explaining how Egyptian citizens made individual decisions about participating in Tahrir square protests, the logistics and their likelihood of success, all driven by the use of Twitter and Facebook. Although they claimed that Twitter played the most essential role in these protests, they did not analyze the tweets pertaining to the protest. We suggest that an analysis of all the tweets during the Tahrir square protests may have helped in a deeper understanding of the relationship between Twitter and protests. Earl and others (2013) analyzed Twitter usage during G-20 protests in Pittsburgh and proposed a theory of Twitter usage during protests. However, their approach does not discuss the role of the major leaders of the protest or their Twitter usage; also lacking was an analysis of the media resources, such as news articles, photographs and videos of the protest, in which were posted on Twitter to disseminate information about the protest.

The above evidence illustrates the lack of a theoretical model to analyze online social media activity during offline protests; to fill this gap, this study proposes to identify and characterize social media usage during one such social movement, the Delhi gangrape. Specifically, it looks at:

- The trend of Twitter usage, in terms of tweet volume,
- The characteristics of these tweets, in terms of the keywords, themes and media resources shared, and
- The users leading the online revolution, or the major role players.

Each of these aspects and the corresponding research questions are discussed in the following paragraphs.

1.1. Trend of Twitter Usage

Recent studies have highlighted the use of Twitter as a fast-pace "electronic word of mouth" to disseminate information during crises events (Phelan et.al, 2011; Lerman & Ghosh, 2010; Mills, Chen, Lee, et. al, 2009) and act as an evolving news sharing system during conflicts and emergencies (Papacharissi & de Fatima Oliveira, 2012; Kwak et al., 2010; Lerman & Ghosh, 2010). Studies focusing only on social crises have corroborative findings of peak Twitter usage corresponding with the timing of protest events (Bajpai & Jaiswal, 2011; Earl et al, 2013).

Scholars have used diffusion theory to study social movements (Wang & Soule, 2012; Strang & Soule, 1998; Hedstrom et al., 2000; Chabot & Duyvendak, 2002) as the approach has major utility for developing an understanding of how social movements evolve. The traditional ideas of diffusion theory would suggest that in order for ideas to diffuse rapidly, there should be direct contact between *adopters* or actors (McAdam & Rucht, 1993). However, we anticipate that the unique social characteristics of Twitter may defy this relatively simple interpretation. In order to investigate the trend of Twitter usage for the Delhi gangrape social movement, we pose our first research question:

Research Question 1: What was the trend of Twitter usage in the social movement against the Delhi gangrape?

1.2. Media Resources in Tweets

Research highlights the 'elite hold' of traditional media in the online sphere (Johnson & Kaye, 2004; Murthy & Longwell, 2012; Meraz, 2009) and how traditional news organizations typically forward the same print and broadcast stories online (Armstrong & Gao, 2010) hijacking the conversations over social networks. Blogs and micro blogs have risen to prominence as news reporting mechanism in recent years (Howard, 2011) but are not yet a significant challenge to traditional media resources (Zhao et al., 2011).

However, Twitter is transforming the traditional and social media battle in the online world – "consumers" have become "producers" who apply available social media tools, such as Twitpic and Instagram for photo-sharing and Youtube and Vimeo for video-sharing, to tweet blow-by-blow encounters live to an attentive online audience looking for accurate, relevant and reliable information (Allen & Thorsen, 2009). We believe the enhanced connectivity experience and the fast pace news dissemination power of Twitter is the weapon of the citizen journalist, and a challenge in the face of the 'elite hold' of traditional media, especially during socio-political events such as protests. None of the studies investigating the use of Twitter during protest events have explored *what* media resources are shared as a part of these tweets or *how* they embody the characteristics of citizen journalism. Besides, it is not known how these trends for media sharing change along the timeline of a social movement. Accordingly, our second research question will analyze and compare the types of media resources shared during the social movement against those shared during the key protest days:

Research Question 2a: What were the most frequently linked media resources in the social movement against the Delhi gangrape?

Research Question 2b: What were the most frequently linked media resources on the days of the main protest in the social movement against the Delhi gangrape?

1.3. Themes of Protest Tweets and Their Usage Characteristics

Tweet themes are the frequently occurring parts of speech, such as nouns and verbs, found by parsing and statistically analyzing the tweet corpus. Studies of Twitter usage during protest events give only a cursory picture of the themes present in the tweets. The study by Papic and Noonan (2011) observed that users often tweet location information during protests; this is an expected finding, because tweeting about locations allows protesters to defy governments' attempts to clamp down on protests by cordoning off locations important to protesters, such as during the Arab uprising in Egypt, when the government had police ready and waiting at most of the protest locations during the April 6 Movements (Ottaway & Hamzawy, 2011). Some early protest studies had established an important interactive relationship between protestors and the police (Kritzer, 1977; McAdam, 1983; Tilly, 1995). Policing protests in an early era was easier as compared to modern social media era as surveillance and information sharing between protestors could be highly controlled by the police (Della Porta, 1998). These studies lead us to expect that the protest-location-police relationship may be important in online social movements as well. To fill this gap, the first part of our third research question is framed as:

Research Question 3a: What were the key themes of tweets during the protest days?

Studies of Twitter and protests have evinced an interest in how tweets are being used in the context of offline events. Garrett (2006) highlights the affordance of information and news dissemination that modern information systems can provide during protests, because Twitter allows protestors to share information in real-time as events unfold at protest venues. It is a viable platform to express opinion (Skemp, 2009) and academic research establishes the medium as a central tool for expressing opinion (Pak & Paroubek, 2010; O'Connor et al., 2010). Activists and protestors use Twitter to mobilize their followers, disseminate information and express their opinion in an uninhibited and far-reaching manner. In doing so, they are able to defy the stronghold of traditional news media's: its ability to marginalize protesters and activists by influencing public opinion through a carefully constructed representation of reality in a selective coverage of social protests (McLeod & Hertog, 1992).

For categorizing tweet content, we adapted the coding scheme of Bajpai and Jaiswal (2011) who while analyzing online protests in Thailand were inspired by Smith's (2001) set of codes to study protest movements. In the context of our study, we laid emphasis on this framework and tailored it in accordance with Twitter. Hence we propose that tweets pertaining to a protest are prominently applied to:

- *mobilize* people towards participating in the protest event
- discuss *clashes* between the protesters and government agencies
- plan *tactics* or discuss the tactics applied by the government to counter protesters
- *report* live happenings at protest venues
- *express* personal opinions
- make *information-seeking* requests
- discuss the activities of the government and protest *leadership*

By adapting the tweet coding scheme to our study, we aim to identify the usage characteristics for the main themes during the days of the protest. We anticipate that during the protest days, Twitter would mainly be used for citizen journalism activities such as real-time information dissemination from the protest venue. Tweets would discuss the clashes between the protesters

and the police and the tactics adopted by either party as has also been found in previous research: police usually uses force in an attempt to disperse protestors and use shifting tactics to control demonstrators, while protesters update and warn each other ahead of time and plan strategies to overcome police tactics (McPhail, Schweingruber & McCarthy, 1998). These premises frame the second part of this research question:

Research Question 3b: What were the usage characteristics for the main tweet themes during the protest days?

1.4. Major Role Players

Previous research has emphasized the importance of leaders in protest movements (Papic & Noonan, 2011; Li & Brien, 2008; Barker et.al, 2001). Protest leaders construct an interpretation of the nature which is used to mobilize people to take part in collective action and leaders' action is of a key prominence in any protest (Li & Brien, 2008). Therefore we felt the need to investigate if the influence of the offline protest leaders would be extant in online space on Twitter. We wanted to investigate if the offline protest leaders were also equally active on Twitter during the protest days. Therefore our fourth research question is:

Research Question 4: Who were the most active individual Twitter users (authors and mentions) during the Delhi gangrape social movement?

2. Case Profile

This case profile outlines and examines the use of Twitter from 17th December, 2012 (00:00 IST), few hours after the rape occurred, to 3rd January, 2013 (00:00 IST) the day Delhi police submitted a charge sheet against the accused. As news broke about the incident, Twitter was buzzing with reactions of the Indian middle class, who took their outrage to the streets in New Delhi.

This social movement also termed as "India's Arab Spring" (Zakaria, 2012), was a watershed moment for social media use in Indian democratic history. It was orchestrated by members of the Indian middle class, simmering with existential angst after a rapid transition into post-modernity. During the protests, Facebook, Twitter and YouTube were key players in communication of the activists, and this fact received much attention in the media (Zitzewitz, 2013). The following dates are significant to this movement:

- **16th Dec, 2012*:*** A 23-year-old medical student is raped and physically tortured along with her male friend by five men and a juvenile on a private bus in the Indian capital, New Delhi. Both were thrown of the bus, picked up by the local police and taken for medical treatment.
- **17th Dec, 2012:** The story is picked up by the regional media. Few Delhiites (residents of Delhi) start tweeting about the incident.
- **18th Dec, 2012:** The story is published in the national press while the Delhi Police starts investigation. Twitter users spread the news.
- **19th Dec, 2012:** Small protests are held at the residence of Sheila Dixit, Chief Minister of Delhi, mostly by students and progressive women's organisation in New Delhi. At this point, Ms. Kavita Krishnan, Secretary of All-India Progressive Women's Association (AIPWA) made a statement criticising the lack of government action and statements by Sheila Dixit that rape victim was "adventurous" by being on the streets of Delhi post midnight. Ms. Krishnan said:

"Women have every right to be adventurous. We will be adventurous. We will be reckless. We will be rash. We will do nothing to produce safety for ourselves. Don't you tell us what to wear? Don't you tell us what time of the day or night we may be out or how many escorts we need?" (Krishnan, 2013)

The police opened water cannons on the small crowd of protestors. Ms. Krishnan's statement and the water cannon episode went viral.

- **20th Dec – 21st Dec, 2012:** The Indian parliament discusses the matter in a live session and serves a notice to Union Home secretary and Delhi police chief. Small public protests take place at Raisina Hill, the location of both the Parliament of India and Rashtrapati Bhavan, the official residence of the President of India. Rapid Action Forces are called upon by the government. The news spreads across broadcast and online media while Delhiites plan a large protest at India Gate the following day.
- **22nd Dec – 23rd Dec, 2012:** Massive public protests are held at India Gate, a major monument at the head of a long promenade to the Raisina Hill, i.e., the seat of the government. Police response is extremely harsh, resorting to water cannons, tear gas and physical violence to discourage protestors. A police constable is seriously injured during clashes.
- **25th Dec, 2012:** The Delhi police constable succumbs to his injuries. The gangrape victim records her statement.
- **26th Dec, 2012:** The gang-rape victim's condition deteriorates in Safdarjung Hospital in Delhi.
- **27th Dec, 2012:** The gang-rape victim is air lifted to Mount Elizabeth Hospital in Singapore.
- **29th Dec, 2012:** The gang-rape victim dies in Singapore.
- **30th Dec, 2012:** The gang-rape victim's body is flown back to India. She is cremated the same day.
- **31st Dec, 2012 – 1st Jan, 2013:** Peaceful candlelight marches are held across India.
- **3rd Jan, 2013 -** Delhi Police submit a 33-page charge sheet against five accused. Police book them under charges of murder, gangrape, attempt to murder, kidnapping, unnatural offences, dacoit, hurting in committing robbery, destruction of evidence, criminal conspiracy and common intention under the Indian Penal Code.

3. Methodology

The methodology flowchart provided in Figure 1 describes the steps in the analysis and the resources used. There were 5 steps in the analysis:

1. Data Acquisition – Raw tweets were extracted for a specific time period from Topsy (http://www.topsy.com/), an archive of the public Twitter stream. .
2. Frequency Analysis – Tweets were subjected to frequency analysis to identify the flow of tweet trend.
3. Domain Extraction and Hyperlink Analysis – Embedded URLs were analyzed to identify the types of media resources.
4. Automatic and Manual Content Analysis –CRAWDAD (Corman & Dooley, 2006) was used to identify the main tweet themes. A coding scheme (our framework based on Smith, 2001) was used for manual annotation to identify the usage characteristic themes in identified themed tweets and also images tweets with images of protest days.
5. Social Network Analysis – The network of users was analyzed to identify how information was disseminated and who the main role players were.

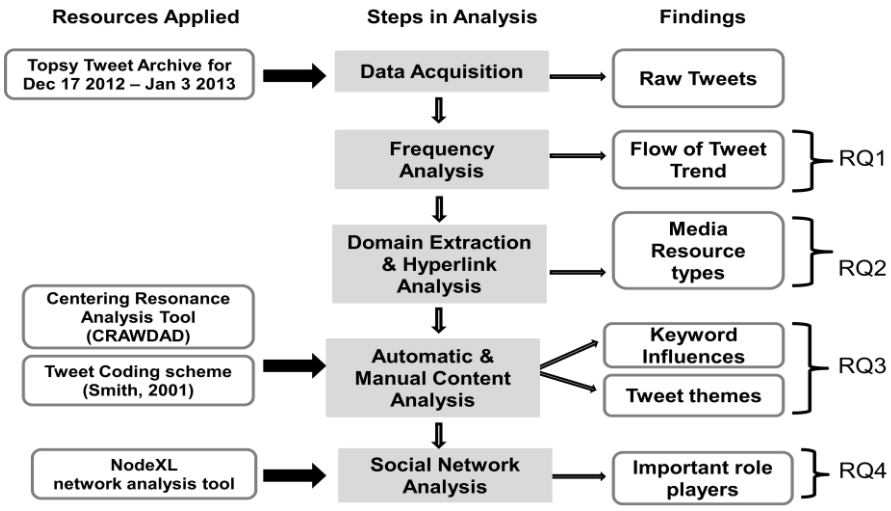

Figure 1: Methodology flowchart

3.1. Data Acquisition

The present analysis was conducted on an archive of tweets posted from midnight (Indian Standard Time) on 17th December, 2012 to midnight on 3rd January, 2013, the period during which the gangrape, protests and the death of the victim shaped India's Arab Spring. The search query used to filter tweets was:

DELHI OR gangrape OR rape OR #delhigangrape OR #delhiprotest OR #delhiprotests OR #indiagate OR #stopthsisshame &maxdate= 1359743400 &mindate= 1365791400 &order= date &lang= en

These search terms were chosen based on a top Twitter trends analysis which revealed that these words and hashtags were trending during the period of interest and marked tweets related to the gangrape incident. The tweets were downloaded in tab-delimited text format using third-party software called Topsy (http://www.topsy.com/), an archive of the public Twitter stream. A Java program was used to access its Application Programming Interface (API), Otterapi (http://code.google.com/p/otterapi/) in the Eclipse IDE environment. For a given time period and search filter, Otterapi returns "significant" tweets, i.e., non-spam and non-repetitive tweets, for the time period entered, filtered by its internal algorithm. In this manner, we collected 104059 tweets, which were organized into an Excel spreadsheet to represent the tweet's text, its timestamp, username, type of tweet (tweet, link, image or video), hits, trackbacks, embedded links and mentions. English was the major language of the tweets which formed the corpus for our manual and automatic content analysis. Tweets in other languages such as Hindi, Bengali, Gujarati, Tamil and Telegu accounted for a total of 15,000 tweets. Before conducting a detailed analysis of the English language tweets, we segregated the regional language tweets and sampled approximately 25% (N = 3300) for an initial analysis. The distribution of tweets with respect to the language is shown in Table 1. We found that one-third of all regional tweets were in Hindi, followed by marginal numbers of Tamil, Bengali and Punjabi tweets. We further analysed the user profile network to identify the users who posted the regional language tweets.

Table 1: Language distribution of tweet set

Language	Frequency (N)	Percentage
Hindi	1126	34.12

Tamil	518	15.69
Bengali	328	9.94
Punjabi	259	7.84
Gujarati	235	7.12
Telegu	217	6.57
Malayalam	209	6.33
Others	408	12.36

In terms of user profile the break up is provided in Table 2 reflecting that almost half of all the users who tweeted in regional languages were news organizations; out of 1472 (44.61%) of tweets by various news organizations, 688 tweets (46.73%) were simple translation copy of the same news reported in English by either the same or partner news source.

Table 2: User profile distribution for the regional tweets subset

Category	Frequency (N)	Percentage
News Organization	1472	44.61
Individual Users	274	08.30
NGOs	680	20.61
Others	874	26.48

Hindi and English are considered the major two languages of India but we found the presence of Hindi language tweets to be low. Also the marginal number of Hindi and other regional languages tweets were mostly generated by news organisations to reflect English content. Accordingly, we decided to focus only on English tweets for our further analysis as the inclusion of regional language tweets would not cater to direct theme of our study.

Our research methodology is also supported by various other studies which have analysed use of Twitter in social movements in non-native English language countries by focusing only on English language tweets. To consider the four major Twitter studies about the Egyptian revolution - the studies for news dissemination by Papachrissi and Oliveira (2011; 2012) discarded 27% tweets bearing the #egypt hashtag (400,000 Arabic out of 1.5 million total tweets) before content and discourse analysis, because Arabic characters could not be recognized by the content analysis tools. The study by Wilson and Dunne (2011) discarded 4% of #jan25 tweets about Egypt's civil revolution, which comprised Arabic, French, Spanish, German, Japanese and Italian tweets. For the same time period, the sentiment analysis by Weiss, Briscoe, Hayes et al. (2011) discarded 67% of all tweets, or 4 million Arabic of their total of 6 million tweets because validation testing by Arabic speakers found that methods for automatic translation of Arabic tweets was unreliable.

We also created a subset of the "relationships" which contained tweets where the user was either replying to or mentioning a different user by using the '@' sign. This subset data set

consisted of 22,679 tweets, including re-tweets. The re-tweets helped in identifying the flow of information within the large network and in identifying the most-mentioned users, the key role players in this social chain of events.

In the frequency analysis, tweets were subjected to frequency analysis to identify the flow of tweet trend. The remaining steps in the analysis are described below.

3.2. Domain Extraction and Hyperlink Analysis

Many tweets contained hyperlinks (URLs) linking content on other resources. These URLs were shortened (automatically via Twitter) through services such as *https://bitly.com*. For e.g., a 133 character URL linking to a news story on Hindustan Times (http://www.hindustantimes.com/India-news/NewDelhi/Delhi-Girl-critical-after-gangrape-in-moving-bus-four-detained/Article1-973767.aspx) was shortened to a 20 character URL link (http://t.co/uFJzzIaF) in the tweet. The Topsy archive provides the full form of these URLs separately, from where we identified the website domain constituting the media resource (e.g. "hindustantimes"). Media resources were manually coded into three categories, based on the nature of information they provided – Traditional, Social and Aggregator:

- *Traditional media* was defined as "websites of print and broadcast media".
- *Social media* was defined as "content generated by users (blogs, social networking sites' posts, micro-blogs, videos, photos and other user-generated news).
- *Aggregator media* resources were defined as "portals that accumulate news content generated by both traditional and social media outlets (e.g., Google and yahoo search engines).

The top 30 categorized domains were listed in descending order of frequency for entire observational period and specifically for protest days (see Table 4).

3.3. Manual and Automatic Content Analysis

3.3.1. Computer Mediated Text Analysis – Centering Resonance Analysis

In order to identify the key themes of tweets during the days of the protest (22nd and 23rd December, 2012), we conducted a Centering Resonance Analysis using the CRAWDAD tool to identify the *key words* used in tweets, and the importance of those words in constructing and propagating information. (Corman & Dooley, 2006; Corman et al., 2002). CRA calculates the words' influence within texts, using their position in the text's structure of words (Dooley & Corman 2002). This influence is based on the extent to which a particular centering word mediates chains of association in the CRA network by connecting strings of words that otherwise would not be connected (Corman et al, 2002 p. 177; p. 123). This is known as the coefficient of betweenness centrality.

The CRAWDAD tool returns the possible centers (the most influential words) in the tweet, which denote the author's intentional acts regarding word choice and message meaning. The quantitative approach adopted by CRA is rightly designed to back out patterns of meanings found on precise mathematical rules, avoiding in this way coder bias that can happen if we were to randomly select tweets from the main corpus to apply content analysis (Oliveira & Murphy, 2009) Previous studies have used CRA to study news values (Papacharissi & de Fatima Oliveira, 2008; 2012). By using CRA in this study, we were able to automatically identify and zoom in on the main themes of the tweets and conduct a manual analysis of usage characteristics of only those tweets.

Our corpus for the days of the protest – 22nd and 23rd December, 2012, contained 17,456 tweets (not including tweets with links to images and videos). It was first cleaned to remove special characters (e.g. &quot, -, ", ;) and then transformed into .txt files for analysis.

3.3.2. Manual Content Analysis – Identifying Tweet Themes

Figure 2 describes how the automatic analysis helped us to create subsets of identified themed tweets for the days of protest and to conduct a manual content analysis on a sample of it. We selected the top two prominent keywords for tweets (top two themes) during the day of the protest and created two subsets of themed tweets containing these keywords. 51% of the tweets were randomly sampled from each subset for further analysis.

We further annotated a random sample of 1003 tweets (64% of the total) linked to images for the days of the protest to understand the usage characteristic themes of these tweets.

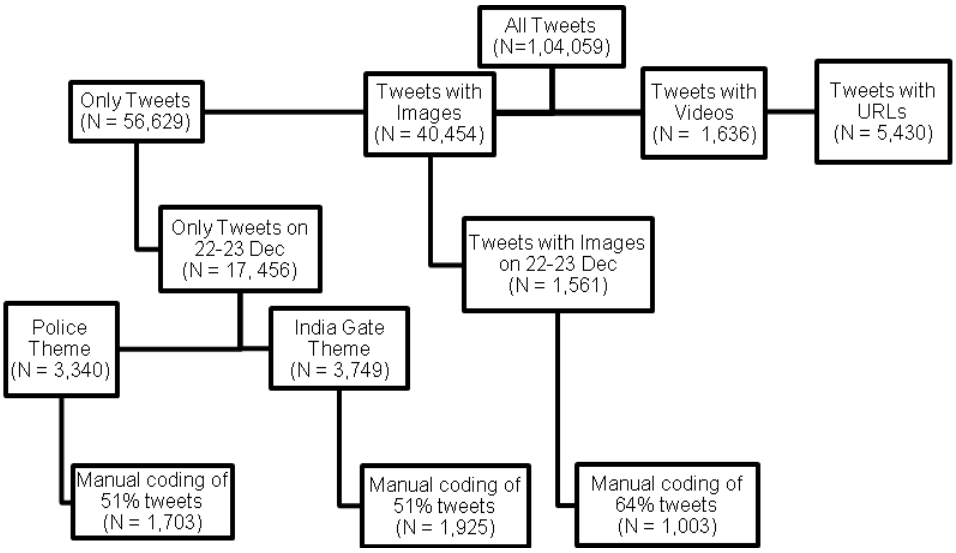

Figure 2: Subsets of tweets for manual content analysis

The coding scheme for manual content analysis was based on Smith's (Smith, 2001) protest themes which were applied in a study of tweet themes in protests in Thailand (Bajpai & Jaiswal, 2011). The coding scheme identifies the following categories: *Mobilization, Tactics, Leadership, Clashes, Information-seeking, Opinion* and *Reportage.* In a preliminary analysis, we observed that besides these categories, users were also using Twitter to provide their own reactions to the protest; these were independent of the user's "opinion". This phenomenon is quite natural, considering that Twitter is a medium for self-expression and its users in this case are protestors. Accordingly, we included a new category into the coding scheme - *Expression*. The final coding scheme is described in Table 3 with examples of the types of tweets found under each category and Figure 3 illustrates the tweets linked to images. Two Research Associates from the School of Humanities and Social Sciences of Nanyang Technological University Singapore were employed to independently code every tweet with one of the themes given.

Table 3: Coding scheme for tweet (themed and tweets linked to images) (extended from Smith, 2001)

Content Category	**Description**
Mobilization	Tweets which described assembling, marshalling or coordination of a group of people. E.g., "Please take Pragati Maidan Metro station for India Gate. Other nearest metro stations are closed on Sonia Gandhi orders"

Tactics	Tweets which describe tactics employed by protestors or government actors. E.g., "Water cannons, lathi charge on protestors gathered at Vijay Chowk. Massive protests outside India Gate."
Leadership	Tweets which describe/reflect upon the leadership of protestors or government. E.g, "Where is youth icon Rahul Gandhi? Ajay Maken (New Delhi MP)? Why doesn't Sonia Gandhi come to India Gate? Big perception loss for UPA"
Clashes	Tweets which describe engagement between protestors and government actors. E.g., "Ultimate irony: images of #Delhi police in khaki uniforms beating young people carrying the tricolour! #DelhiProtests #IndiaGate"
Information-Seeking	Tweets which seek information in terms of asking for local information, clarifications or emerging situations. E.g., *"Are the Tear Gas attacks from Delhi Police at India Gate still on?"*
Reportage	Tweets which contain photos, videos and eye witness accounts of happenings at the ground level. E.g., *"Just as I reached india gate, hit by tear gas, irritates for a while, then gets better"*
Expression	Tweets which contain self reflections of events or happenings. E.g., "I am pained and shocked at delhi police insensitivity. They fired tear gas shells after lifting section 144 nd had said it's ok to protest"

3.4. Social Network Analysis

We conducted a social network analysis (Scott, 2000) of the relationships in our tweet corpus, formed by the way users mentioned each other in their tweets. NodeXL was used to visualize the high-density network. NodeXL generated graphs to map out interactions between the network users and high end users based on the following relationships - "Replies To" and "Mentions" - as shown in Figure 11. A total of 22,679 edges with 9323 unique vertices were analyzed. To render the social network, the Fruchterman-Reingold layout was used to cluster tightly connected users to one another**.** Further we used NodeXL to discern which Twitter users were considered to be 'major role players' based on 'degree range' which represented how many unique interactions a single user had had with other users (Figure 12).

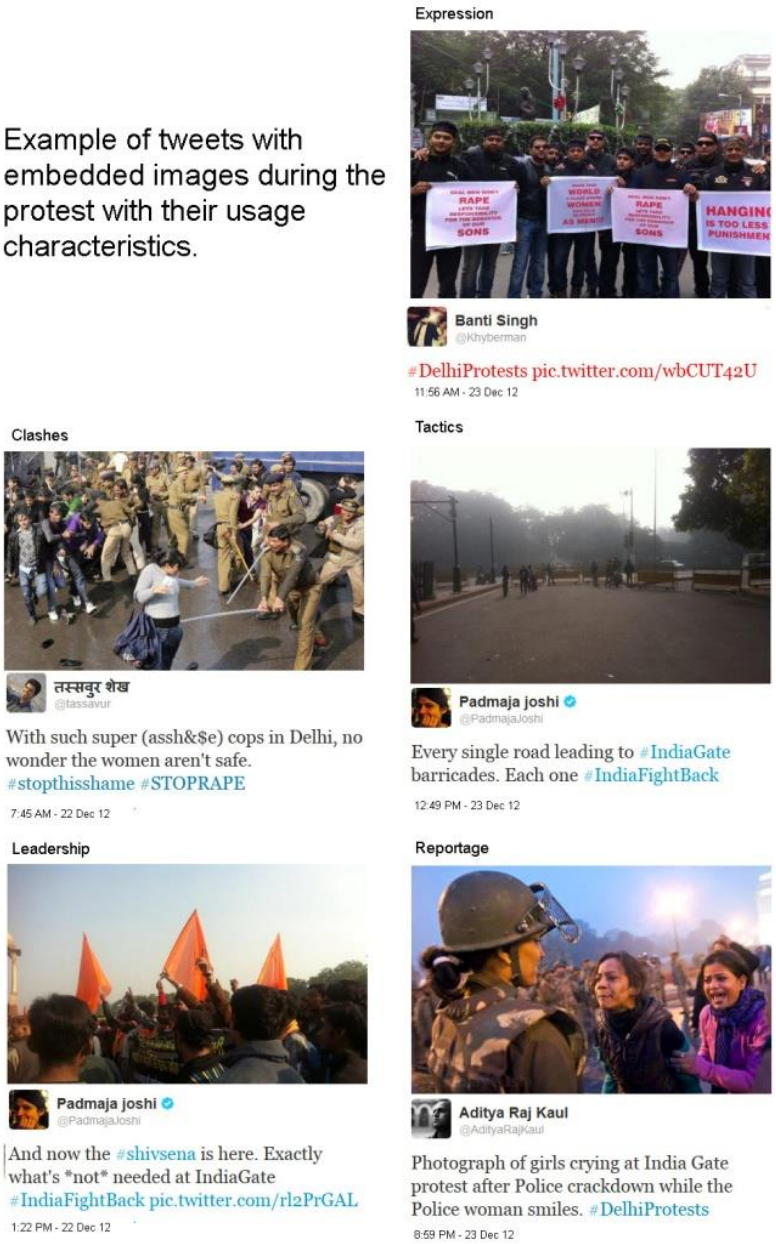

Figure 3: Examples of tweets with embedded images during the protest with their usage characteristics

4. Results

4.1. RQ1 – Trend of Twitter Usage

For our first research question, we identified the trend of Twitter usage across this entire social movement lasting eighteen days (17th Dec, 2013 to 3rd Jan, 2013). Figure 4 shows that tweeting reached its peak on 23rd December, 2012 which was the second and the biggest day of major

protests at India Gate. Our findings are consistent with previous research on use of social media and protests which recognizes the fact that tweeting is most common during the days of major protest as compared to other days (Bajpai & Jaiswal, 2011; Eart et al., 2013). The average per day tweeting rate was at 5,781 tweets per day with a maximum of 15,421 on 23rd December, 2012 – the second day of major protests and a low of 1,939 on 17th December, 2012 – the day when regional media broke the news.

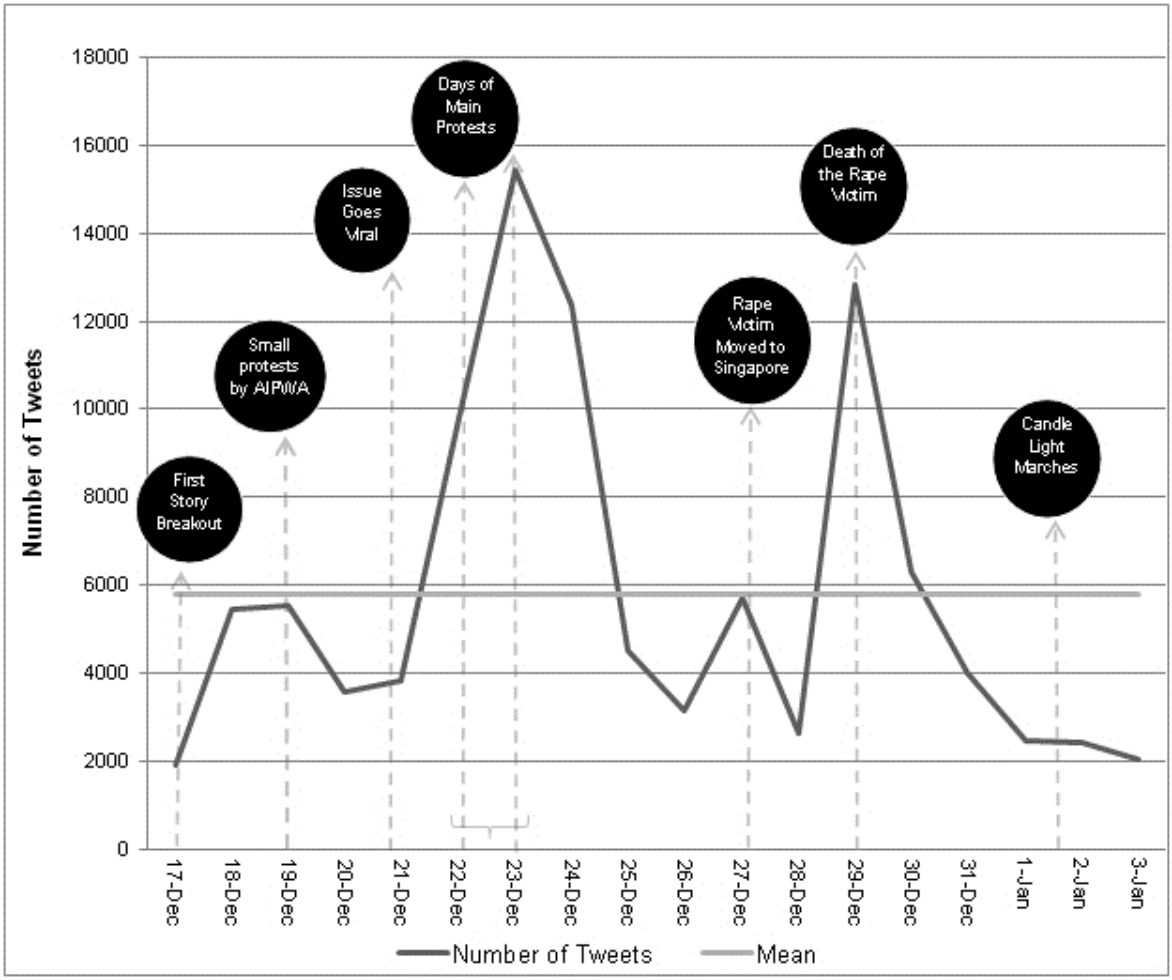

Figure 4: Flow of tweets against major events during the observational period

Most other studies investigating the relationship between social media and protests have not observed a subsequent spike in usage trend outside of protest days; but this study found a secondary spike on 29th Dec, 2012. We hypothesize that this increase was sparked by the death of the rape victim in Singapore.

4.2. RQ2 – Types of Media Resources in Tweets

Our second research question explored the types of media resources used to broadcast information in Twitter. For purpose, we divided the tweets into four categories:

1. Tweets: Tweets which do not contain any link.
2. Links: Tweets which contain hyperlinks referencing content to other websites.
3. Images: Tweets which contain link to images.
4. Videos: Tweets which contain link to videos.

Figure 5 shows the broadcasting information trend on Twitter. The tweets which contained links were widely used during the initial period. Their usage peaked during the day of protests and hit another maximum on the following day. Tweets containing images were the highest on 23rd December, 2012, the second day of major protests.

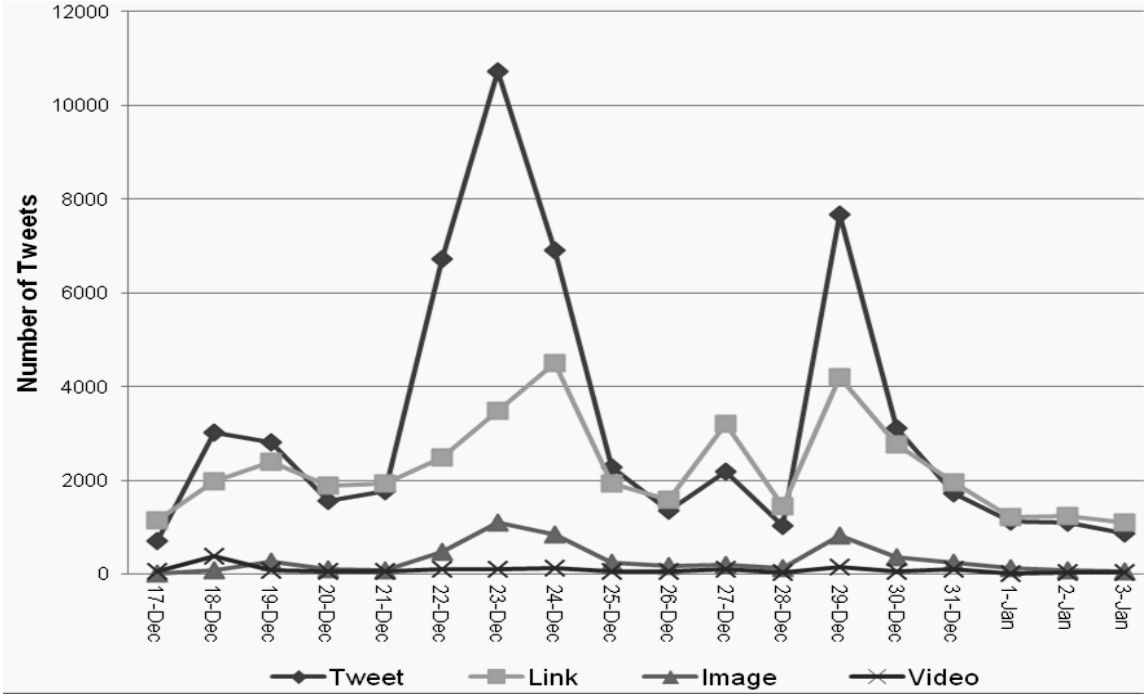

Figure 5: Broadcasting information trends on Twitter during the observational period

Figure 5 showed that users were most active during the days of major protest and also tweets with images, links and videos were widely distributed during this period. We analysed the tweets with links, images and videos to investigate the popularity of various media sources. The data in Table 4 display the top 30 linked to media resources during the movement and during the protest days. We found traditional media was the most frequently linked media form in tweets during this movement with IBN Live, an English-language Indian television news channel, the most frequently linked media resource with 9.68% of the overall distribution.

Overall, it was found that 10 websites out of top 30 are social but their representation was overshadowed by the traditional media which accounts for 18 websites out of top 30. The top 10 websites account for approximately 50% of the overall distribution, here traditional media (32.89%) outweighed social media (16.06%). Overall, Twitpic (7.67%) was the notable social media resource with a position at number three in the overall top 30 list. Aggregator (notably Google) accounted for only 0.48% of the overall distribution.

The analysis for the most popular media resources during the days of protests presents a different picture, as seen in the later columns of Table 4. During this period also, the top 10 websites accounted for approximately 50% of the overall distribution. We found Twitpic (social media) with 19.43% of the overall distribution was the most frequently linked media resource in

tweets during the days of the protest. Rightnow, Facebook and Youtube were also in the top 10 frequently linked media resources.

Table 4: Information sources in the Twitter feed during the social movement

	During Social Movement				During Protest Days			
S. NO	SOURCE	N	%	TYPE	SOURCE	N	%	TYPE
1	ibnlive	3842	9.68	T	twitpic	1506	19.43	S
2	indiatoday	3205	8.08	T	ibnlive.in	822	10.61	T
3	twitpic	3044	7.67	S	hindustantimes	464	5.99	T
4	hindustantimes	2488	6.27	T	indiatoday	218	2.81	T
5	firstpost	1990	5.02	S	rightnow	162	2.09	S
6	indianexpress	1370	3.45	T	ndtv	157	2.03	T
7	youtube	1336	3.37	S	timesofindia	148	1.91	T
8	thehindu	892	2.25	T	youtube	141	1.82	S
9	timesofindia	654	1.65	T	facebook	128	1.65	S
10	ndtv	598	1.51	T	thehindu	117	1.51	T
11	facebook	565	1.42	S	twitpic	110	1.42	S
12	justiceforwomen	393	0.99	S	firstpost	107	1.38	S
13	rightnow	350	0.88	S	india.blogs.nytimes	104	1.34	S
14	change	337	0.85	S	cnn	101	1.30	T
15	bbc	302	0.76	T	indianexpress	87	1.12	T
16	time	265	0.67	T	zeenews.india	85	1.10	T
17	news.oneindia	238	0.60	T	mediacrooks	79	1.02	S
18	news.indialocals	237	0.60	T	news.oneindia	74	0.95	T

19	india.blogs.nytimes	231	0.58	S	dnaindia	73	0.94	T
20	in.reuters	228	0.57	T	google	55	0.71	A
21	causes	220	0.55	S	aljazeera	54	0.70	T
22	dnaindia	216	0.54	T	news.indialocals	47	0.61	T
23	facebook	212	0.53	S	da.feedsportal	40	0.52	A
24	google	190	0.48	A	indianexponent	35	0.45	T
25	huffingtonpost	189	0.48	T	thinkprogress	35	0.45	S
26	zeenews.india	179	0.45	T	sify	33	0.43	T
27	indiatvnews	172	0.43	T	kafila	30	0.39	S
28	thinkprogress	169	0.43	S	newindianexpress	28	0.37	T
29	news.in	160	0.40	T	yahoo	25	0.37	A
30	aajtak	158	0.40	T	reuters	25	0.33	T

Legend for “Type”:

S – Social

T – Traditional

A – Aggregator

4.3. RQ3 – Themes of Protest Tweets and their Usage Characteristics

4.3.1. Keyword Influences – Tweet Themes

In order to answer our third research question we used CRA on the corpus of 17,456 tweets for the two days of major protests. Figure 6 reveals the arrangement of analyzed words in the tweets by CRA, based on how influential or central they were. The most influential words are in the red box, the slightly less influential words are in the yellow box and finally the lesser influential words are unboxed. The lines in the map depicted the levels of associations among words, with darker lines depicting stronger associations (Croman & Dooley, 2006). The configuration of the word map generated by CRA shows us the two most important words as ‘India’ and ‘Delhi’ thereby illustrating that all tweets were mainly about ‘Delhi’ and ‘India’. They signify the overall information provided by the representation of word map.

To understand the sub-themes we had to investigate the next level of influential words and found them to be ‘protest’, ‘#indiagate’, ‘gate’ and ‘police’. These were the key themes of the tweets during the days of the protests. Further, we focused on analyzing the tweets which contained the word ‘police’ and ‘India gate’ - as supported by our CRA analysis – and in support with previous research on public protests which emphasized the importance of ‘police’ during protests (Kritzer, 1977; McAdam, 1983; Tilly, 1995). To do so, we created two subsets of tweets under the themes –

'police' theme (N=1,703=*51% of 3,340 'police' tweets*) and 'India gate' theme (N=1,925= *51% of 3,749 'India gate' tweets*). Our analysis of the two subsets reveals similar results.

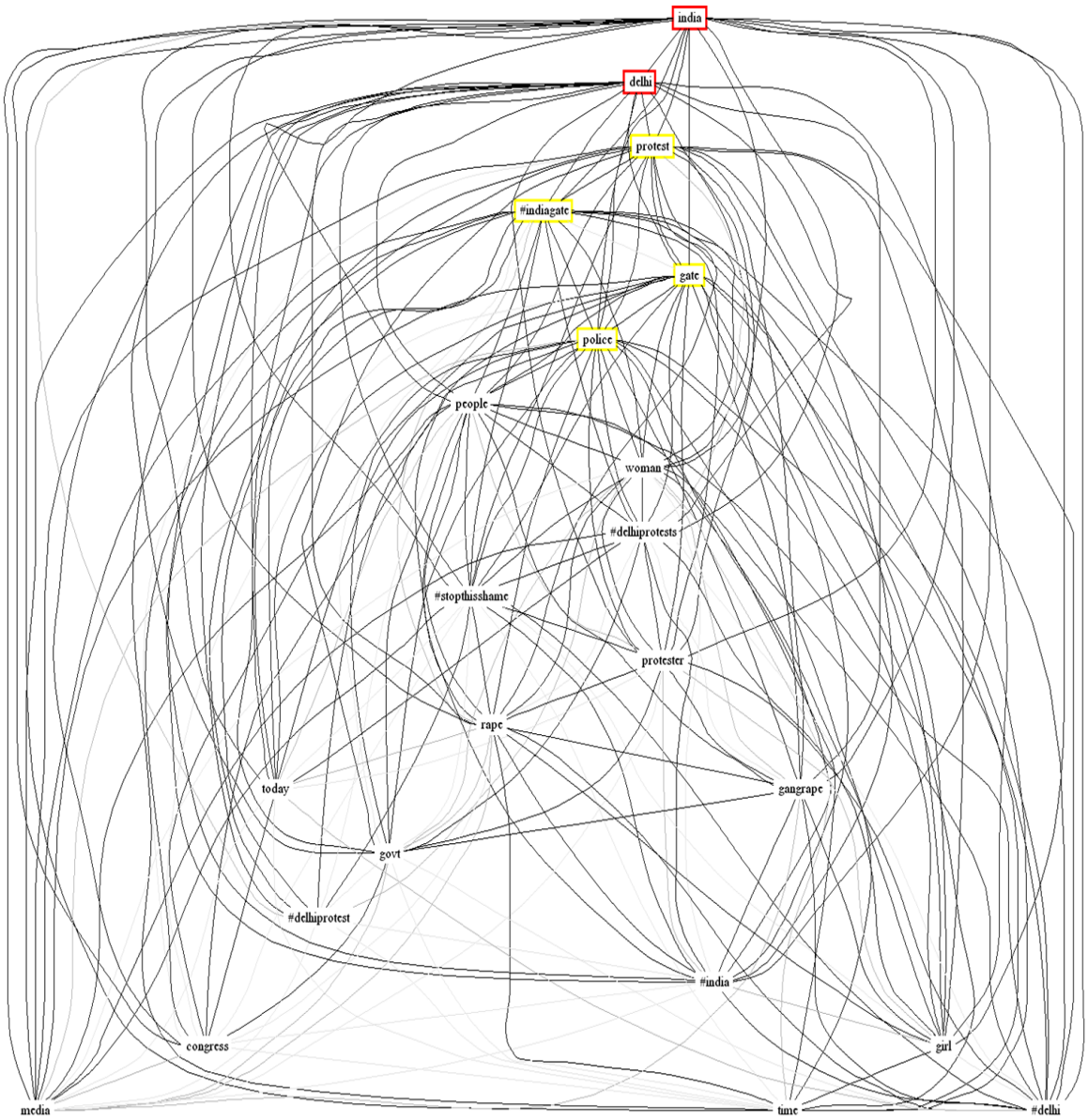

Figure 6: Map of keywords obtained from Centering Resonance Analysis

4.3.2. Usage Characteristics

Figure 7 details the usage characteristic theme (based on Smith, 2001) identified for the tweets from the 'police' subset (N=1,703). Results revealed that a large number of protestors were reporting live about the on-going incidents at the site. The tweets mainly comprised eye witness account of happenings at the venue (Reportage, N=1,215) and incidents of clashes between police and the protestors (Clashes, N=1,132). These acted as primary sources of information and were re-tweeted several times throughout the day. Expression (N=1,059) also scored high amongst the users who were open in expressing their views through their tweets. Tactics (N=826) employed by

the police and the protestors were also moderately discussed in these tweets. Mobilization (N=114) and leadership (N=226) discussions were rare and information-seeking (N=24) near negligible.

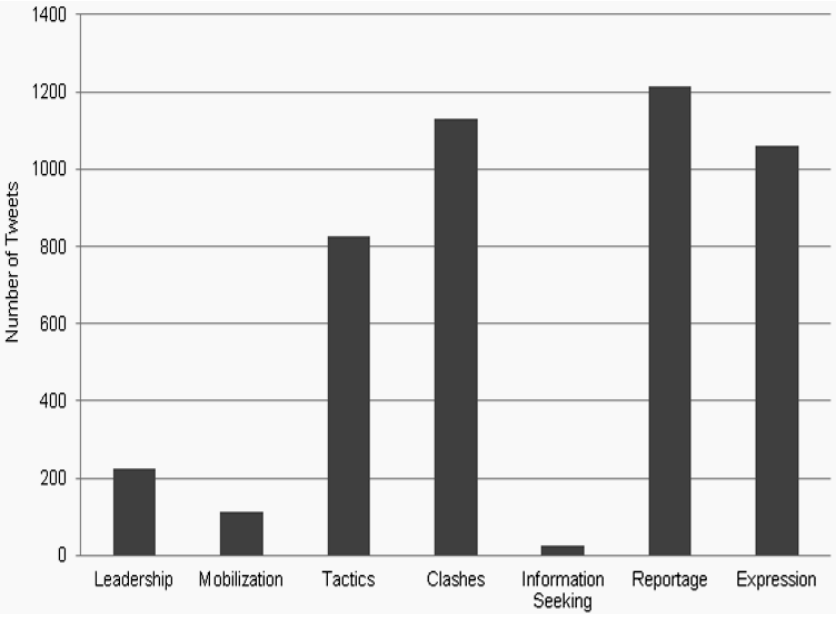

Figure 7: Tweet themes from the 'police' subset during the protest

Findings from the analysis of second subset, theme: India Gate (N=1,925) were similar to the findings of the previous subset and are provided in Figure 8. Users were primarily acting as citizen journalists, reporting on the live events (Reportage, N=1,115) assorted with their opinions (Expression, N=1,295) of the events unfolding at India Gate. Here too, the details on the clashes (N=422) between the police and protestors and the tactics (N=599) followed by the two parties were prominently discussed.

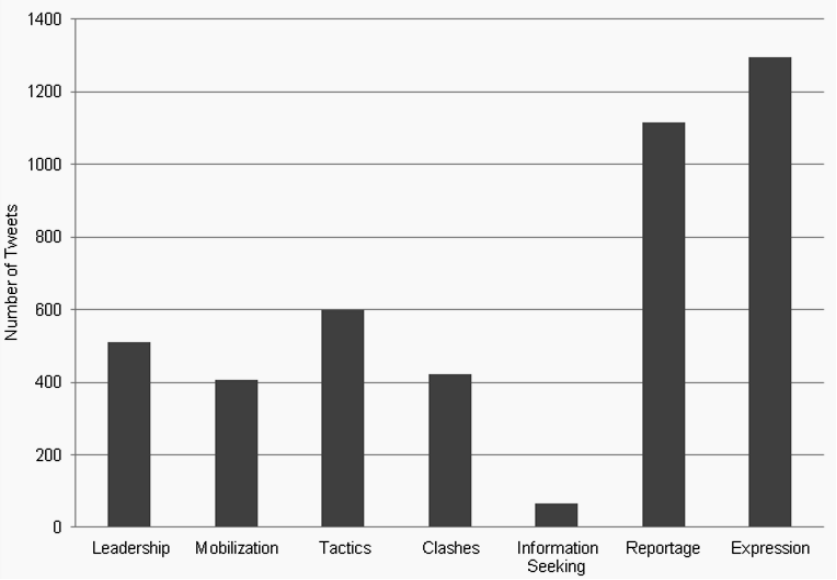

Figure 8: Tweet themes from the 'India Gate' subset during the protest

Previous academic research emphasizes the importance of messages and meanings images convey during social movements (Corrigall-Brown, 2012; Philipps, 2012). Accordingly, for our study we found it imperative to analyze the tweets linked to images and consequently applied the tweet content coding schema to analyse them during the days of the protests (N = 1,003 or 64% of 1,561 tweets with images during protest days) to understand their usage characteristic pattern. Figure 9 reveals the results for the same. Here too users were primarily acting as citizen journalists, reporting on the live events (Reportage, N=846) assorted with their opinions (Expression, N=559) of the events unfolding at India Gate. Images were widely used to portray and discuss the clashes (N=536) between the police and protestors and the tactics (N=435) followed by both parties.

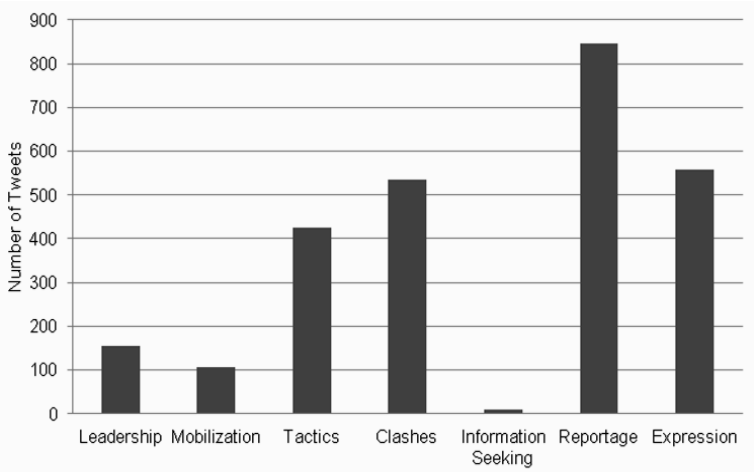

Figure 9: Themes of tweets with embedded images during the protest

For a comparative understanding of usage characteristic pattern of tweets and images during the protests, we compared the results of the two tweets subsets against tweets with images. It was found that reportage and expression emerged as the primary usage categories. The results are in Figure 10 are consistent with previous findings of the descriptive power of Twitter and its emerging space as a medium of live reporting and storytelling. Conversely, Twitter was moderately used to discuss prevailing tactics and report clashes between the protestors and the police, and marginally used to discuss the government and political leadership or to mobilize protesters during the period.

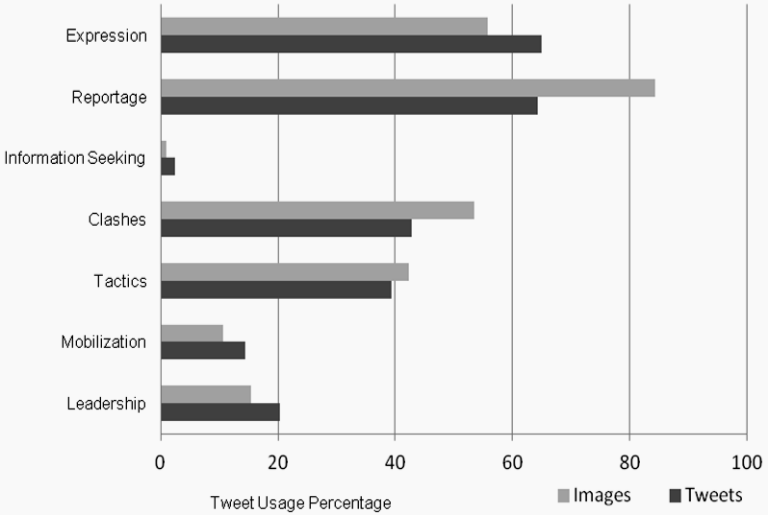

Figure 10: Tweet themes from two subset (Police and India Gate combined) vs tweets with images

4.4. RQ4 – Major Role Players

Our final research question aimed to identify major role players during the protests. We analyzed the tweets to identify individuals who were frequent authors and mentions in the tweets. Table 5 shows the top five individual authors and Table 6 shows the top five mentioned individual.

We found that @sakshikumar and @zenacostawrites played a major role as an information source with the highest individual tweets, and they were mentioned frequently on Twitter during this social movement. Sakshi Kumar (@sakshikumar) and Zena Costa (@zenacostawrites) are core members of Justice for Women "an online movement to provide people across India a platform to marshal their resources and stand up for women who have been wronged". They started an online movement on Twitter in July 2012 as a form of protest against the molestation and manhandling of a teenage girl by a crowd of approximately 40 men outside a bar in Guwahati (Chakrabarti & Shanmugam, 2013). Both Sakshi Kumar and Zena Costa were highly instrumental in leading the protests (Ishizuka, 2013).

Table 5: Top five individual authors during the social movement

Individual Author	**N**	**Profile**	**Location**
sakshikumar	399	Social Worker	New Delhi
leishembaraj	357	Chief Corporate Correspondent at Press Trust of India.	New Delhi
shivaroor	349	Deputy Editor, HeadlinesToday	New Delhi
zenacostawrites	310	Social Worker	New Delhi
arvindkejriwal7	292	Social Worker	New Delhi

Table 6: Top five mentioned users during this social movement

Individual Mention	**N**	**Profile**	**Location**
sakshikumar	370	Social Worker	New Delhi
BDUTT	361	Editor & Journalist, NDTV	New Delhi
sardesairajdeep	332	Editor in chief,	New Delhi

		IBN	
zenacostawrites	229	Social Worker	New Delhi
tajinderbagga	229	Social Worker	New Delhi

The descriptive statistics presented above provided us with a starting point of analysis of the online social network. Figure 11 shows the generated network graph based on the macro-level approach (Hansen et. al, 2010). We found 22,679 edges with 9323 unique vertices. The average geodesic distance was 4.68 thereby indicating the close association between the large-scale network users (graph density = 0.003).

Once we mapped out the entire large-scale network graph we analyzed the network for major role players, the high-end users who best connected to the entire network. We filtered the network for users with degree range of above 100 and visualized them on NodeXL to supplement our descriptive findings. Figure 12 shows the major role players within the entire network and their high interconnections with the network as a whole. Each arc represents a connection. The visualization reveals the reach of individual role players as the denser collection of arcs represents the strong relationship between the major role players and the entire network.

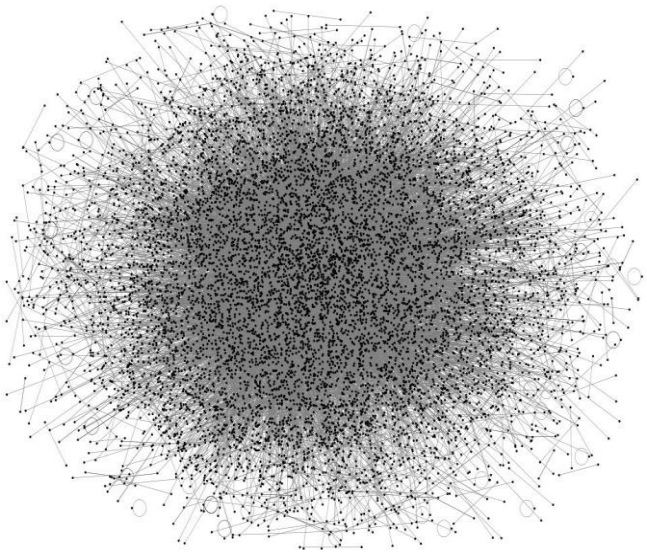

Figure 11: The large-scale network graph constructed using Fruchterman-Reingold layout

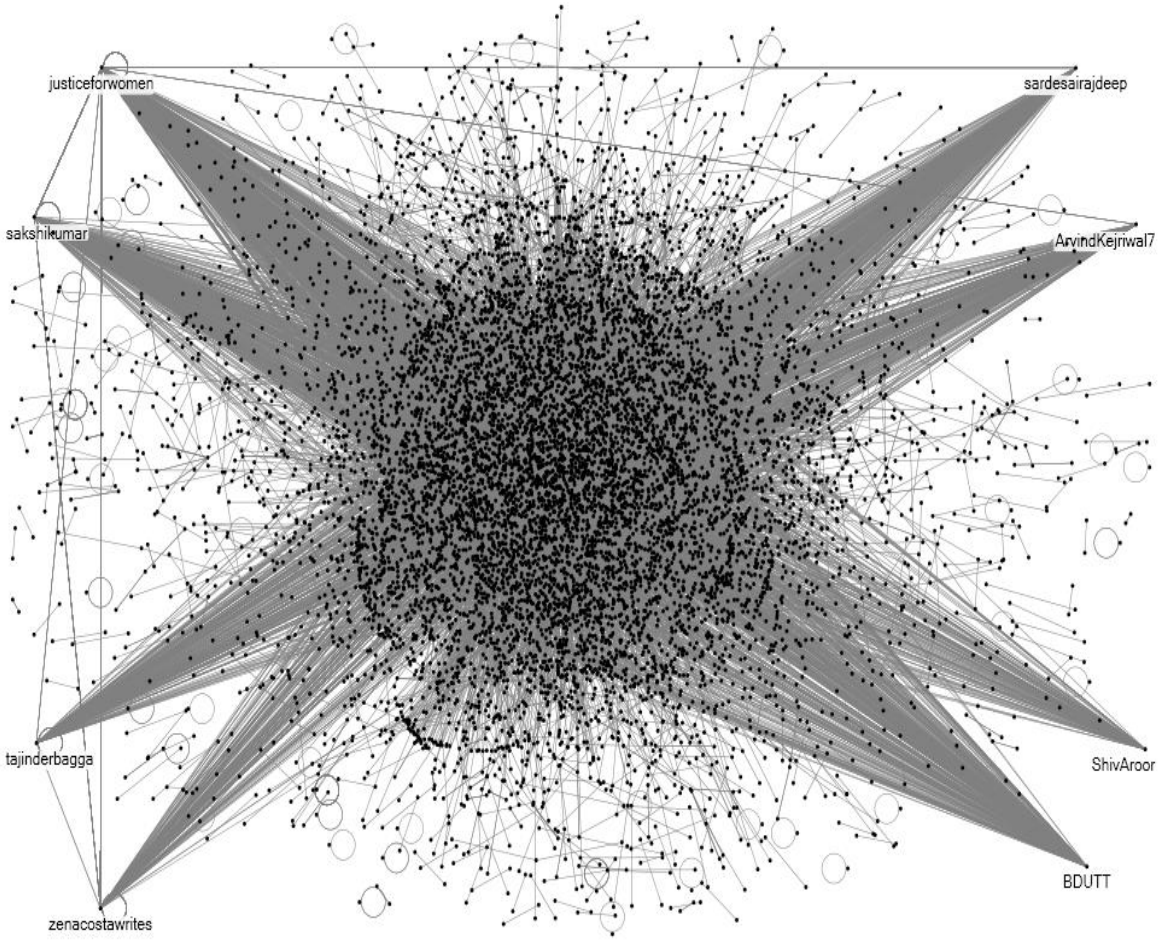

Figure 12: Relationship of the major role players (degree range >100) with the large-scale social network; constructed using Fruchterman-Reingold layout

5. Discussion

With the Delhi gangrape protests, India witnessed one of its biggest protests which marked the rise of the middle class. Using original data, we offer a concrete understanding of Twitter's role as an information diffuser.

A gangrape incident is not an aberration in the Indian society – statistics provided by the government of India indicate that a woman is raped every 20 minutes. The country has one of the lowest conviction rates for rapists in the world (Simpson, 2013). However, what made the Delhi gangrape extraordinary was the outcry and discussions which it sparked within India and worldwide, and the way this clamor persisted in the public mind space through social and traditional media. Here we posit that Twitter proves to be a dominant social media tool that is extensively used during protests and has the potential to incite and sustain social movements (with help from traditional media) by diffusing specific news and information.

5.1. Twitter: A Rapid Information Route

Scholars have used diffusion theory to study social movements (Wang & Soule, 2012; Strang & Soule, 1998; Hedstrom et al., 2000; Chabot & Duyvendak, 2002) as the approach has major utility for developing an understanding of how social movements evolve. The involvement and utilization of social media tools, such as Twitter, is drastically influencing the framework of social movements and protests in modern technologically-driven societies. Twitter as a *channel* of diffusion of ideas has provided new insights because of its compact and rapid news and ideas sharing facilities; it

diffuses the news or ideas at a swift pace and to a vast set of *adopters* defying geographical boundaries. In doing so it also breaks away from the early diffusion theory principles applied to social movements and protests that believed ideas to diffuse rapidly if there was a direct contact between *adopters* or actors (McAdam & Rucht, 1993). This is also validated by the evidence from the Delhi gangrape data set where we observed that the attacks occurred on December, 2012 at about 9:30 PM (IST) but it was only after two days that the basic events were established in the national media (Zitzewitz, 2013). However, our analysis found approximately 2000 tweets for 17th December, 2012 with one of the very first tweets posted by @soulinwords just twelve hours after the attacks:

"how worse can it get? raping with impunity.. such devils in humanform.. #delhi #gangrape"
@soulinkwords at 9:21 AM (IST) on 17th December, 2012

This illustrates the rapidity of the *channel* in breaking news at a very early stage. Also the extensiveness provided by the medium is proven by the fact that when @masala_chaai, a Twitter user in Pune, an Indian city 1439 kilometres away from Delhi, tweeted the following message; it was retweeted several times by Twitters users in Delhi, Mumbai and the rest of India. These properties of Twitter make it a *channel,* suggesting a break from traditional routes of social movements and protests but traditional media still proves to be imperative to the central cause.

"Dear #Delhi, dont limit yourself to outrage on twitter. Protest on road. And yes, vote wisely next time. #Gangrape" @masala_chaai at 11:55 AM (IST) on 17th December, 2012

5.2. Twitter: Shifting Balance of Media Powers

Scholars have called for the need to study protest events as unit of analysis rather than social movements in entirety to understand the importance and functionalities of a movement (Sewell, 1996; Tilly, 1995; Koopmans, 1993). Previous scholars have suggested that there is a significant relationship between online and traditional media resources during protests (Dutta-Bergman, 2004; Jankowski & Van Selm, 2000). Our findings reaffirm this relationship by highlighting that traditional media still plays a critical role in disseminating information during the Delhi gangrape protests. Our findings fit in the media complementarity framework, because the user of online news (social media) in a specific content (movement news) is more likely to seek out the same news from traditional media outlets.

Twitter functions as an integral element in a symbiotic relationship with the traditional media in social movements; but when it comes to protest events, we found that it plays a larger role than traditional media. Protests are marked by three distinctive characteristics: actors engage in collective action against a clearly defined opponent, are linked by dense informal networks and share a distinct collective action. Twitter embodies these characteristics in a user-friendly platform with a wide outreach, enabling the initiation and creation of a strong informal network. A user who opposes the action or inaction of the government or the judiciary posts a tweet calling for an action; the tweet is retweeted by a number of Twitters users rooting for the same cause. In this way, an expanding, dense informal network is created, which is extremely vital for the success of protest events. It is evident that Twitter proved to be an effective tool during these protests at the disposal of a virtual army of activists acting as citizen journalists ready to tweet about every action from the ground. This army was not reporting but also freely expressing their opinion through their tweets, an advantage that had eluded the protest activists during pre-social media era. With the power to tweet your thought activists no longer have to unfurl huge banners depending at the mercy of the traditional media to propagate their opinions. The following is an example of the same:

SCREW THE MEDIA!!!!! People were bloody PEACEFUL!!!Sitting down and protesting when POLICE shot Water cannons #peaceprotestmarch #IndiaGate

@sakshikumar at 12:23 PM (IST) on 22nd December, 2012

As discussed above, today Twitter acts as a key information flow tool with fast and channelized information flowing capabilities that is imminently challenging the information control by authorities. Djankov and others (2001) in their study investigating the ownership of traditional media in 97 countries worldwide found that most of the largest media firms were controlled either by the government or private families with strong ties to the government. Our societies is always at the danger of being influenced by the agenda setting media in emergent times like protest and Twitter here may totally destabilize the model for it provides the protest actors to 'report' unedited version of their truth and reach out to other actors and the world. During the protests at India Gate, activists who were frequent Twitter users were providing eye witness accounts from the protest venue. For example, a tweet from @pkgulati reads

"Public spontaneously pours to protest the Delhi #Gangrape – and, guess what?! Govt gangrapes Delhi by Section 144, No Metro, Brutality!"

@pkgulati at 11:15 AM (IST) on 23rd December, 2012

Twitter gave protest actors a voice and therefore power. Not only were the users disseminating news instantaneously from the protest grounds but most of them extensively linked photographic documentation. Our findings revealed that Twitpic was the most frequently linked media resource during the days of protest. Twitpic is distinguishing ordinary citizens from professional journalists and empowering them to report images from events on the grounds as and when they happen thereby promising a new and fast-paced breed of news making during events such as protests. Our analysis revealed the highest use of images during one of the protest days. Tajinder Pal S Bagga (@tajinderbagga) was an influential activist in this social movement and frequently mentioned on Twitter. He posted the following photograph during second day of the major protest and his tweet was retweeted 78 times during the day.

"Is this 70 Year Old Aunty & A Youth Girl are anti social element?? (pic)

@tajinderbagga at 12:15 PM (IST) on 23rd December, 2012

Figure 12: Image posted by @tajinderbagga

In summary, the discussion of the on-going events on Twittersphere followed by intensive use of Twitpic reflected a three-way intertwined relationship where protest actors enabled cyber activism which was a major trigger and sustenance for street-activism and protests; civic engagement where these actors hoarded in large numbers at protests and citizen journalism, promoting self-news making through their up-to-date expression and documentation of opinions and their own versions of reality. As a consequence of this wave of citizen journalism, traditional media was obligated to follow an "ambient model" of journalism (Hermida, 2010) during the Delhi gangrape protests, where the public discussion about the event reverberating on social media platform drove news media reporting in press and television. This could possibly mark the start of the end of the 'elite hold' of traditional media in the days to come.

5.2.1. Twitter: Redefining Relationship between Protesters and Government

Our findings for the key themes of tweets for the days of protest revealed police and location at the core. Primarily, the relationship between police and protestors is old. Most protest actions disrupt public order thereby forcing the mobilization of police forces to police the protest and control information flow (Della Porta, 1998). Not only do the police and government follow traditional styles of blockages to control information flow during protests, such as blocking off key protest areas thereby limiting ground information flow but they also directly lock information flow mediums, such as banning mobile networks in protest areas. However, Twitter as an information sharing network is disengaging this police control over information because most of the users used Twitter to report on the clashes between police and protestors on-site and openly discussed tactics adopted by both parties.

"Delhi Gangrape protests: More use of water cannons and tear gas shells by the police"

@ manimeow at 12:28 PM (IST) on 23rd December, 2012

Protest tactics can involve anything from lighting candles, making speeches, holding sit-ins to waving signs. Some tactics can spread like wildfire and sequentially can be a key to protest itself. One of the key issues during a protest is the fact that protest actors change tactics depending on the police-protestors situation and the challenge arises in sharing this information with a large mass of protest actors. Twitter in such a situation proves to be the best medium of information spread. Like in the protest at India Gate, Delhi police was offering money to some of the protest actors to return home. This sordid act by the police soon spread like wildfire. @anushreekejriwa tweeted, *"The Police offering money to the protesters. Fuckers. #IndiaGate #peaceprotestmarch #Delhi".* The tweet was soon retweeted a number of times till it caught the attention of traditional news media sources who were keeping a watch on Twitter activities. The disgraceful act by the police was later presented across major evening news channel throughout the country garnering huge criticism for the police force. This is just an example of how Twitter is proving to be major force during protests.

5.3. Twitter: An Important Ground for Role Players

Our findings identified that the major role players in the Twitter analysis were the offline protest leaders themselves. Sakshi Kumar (@sakshikumar), Zena Costa (@zenacosta) and Tajinder Pal S Bagga (@tajinderbagga) were recognized as most frequent authors and mentions in our statistical and social network analyses. These were also key figures on grounds at India Gate on both days of protest. Sakshi Kumar and Zena Costa are founding members of Justice for Women, an institution fighting for women rights in India, which played a major role in mobilizing these protests at India Gate. In an earlier investigation, the Justice for Women's blog was found to be a frequently linked to media resources in the tweets for the Delhi gangrape social movement and the social network analysis listed it as the most important role player (Ahmed & Jaidka, in press). These findings and relationships suggest that the major role players on Twitter were the most important element of offline protests, who hugely utilized Twitter for their protests and channelizing this social movement. Our finding is highly relevant to the study of Twitter and the relationship of protest leaderships with social media.

In the past, television networks have been the largest players in Indian news coverage and are majorly responsible for either alleviating or aggravating a crisis situation (Ahmed, 2010) but with the advent of social media things are changing. However, there is a socio-cultural divide in the country, those who use social media are more likely to live in cities and share values with fellow social media users but Delhi gangrape proved to be different as the agitation showed on social media, triggered the Indian society at large and this specially marks the use of Twitter as an indisputable game changing force. As witnessed, Twitter provided new avenues for news-gathering and on-site story distributions, especially during protest days at India Gate. This protest democratized Indian media's functionalities in the society and Twitter had a major role to play as it provided ordinary citizens the opportunity to document the protests, to spread detailed word about ongoing activities, to provide evidence of government brutality and to disseminate their own words and images to each other, and most importantly, to the outside world with the help of both transnational and regional media.

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