

# #ExpandingNarratives: Twitter's Response to the 3.11 Earthquake in Japan

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**Abstract:**

This study aims to offer a look at the online social narrative following the Earthquake in Japan. Through the coding of various Tweets from three separate windows following the first six months after the quake, content categories were developed, calculated, and then compared to the results found when coding conventional media (i.e. online news articles and scholarly sources). These were then analyzed in the context of how information is shared and disseminated. The results show that, while there is a social hierarchy, Twitter allows users to interact with news sources in a two-way exchange.

**I. Introduction:**

On March 11th, 2011, Japan was rocked with a 9.0 magnitude earthquake. The earthquake and subsequent tsunami devastated cities across the country physically and emotionally. From the first tremors felt, the people of Japan turned to social media to document the phenomenon first-hand.<sup>1</sup> By posting updates on social media, such as Twitter, news circulated around the globe. As information became available, it was accompanied by emotional distress. Friends, families, and faceless Twitter users received notifications, and could observe the disaster narrative unfold with each new Tweet.

What resulted online after the quake represents a new piece of narrative that has not traditionally been available for the global community. Individuals gain another perspective on an event by turning to this online storytelling. Moreover, users are given the unique ability to chime in with their own thoughts, insights, emotions, and pictures- essentially any reaction they feel the urge to share with the greater network of users. To understand what this new perspective is, and how these online conversations evolve, there is value in comparing how the Twitter narrative is distinct from other traditional, or conventional, sources of information. For the purpose of this research, “conventional sources” are defined as articles from major news networks, and scholarly articles published after the event. This paper aims to shed light on the new digital media perspective by examining differences in content between Tweet content and traditional media’s information available over a six month reporting block following the earthquake. This comparison demonstrates that Twitter perspective offers immediacy, intimacy, and interactivity that old media lacks, but doesn’t offer as rich an understanding as published media and scholarly texts. Instead, Twitter offers an opportunity to round out an individual’s need for social intimacy and support by allowing users to participate in conversations in the wake of disaster, amid a sea of horrific news updates. Twitter seems to fill a new space in media because it serves more as an active resource than the traditional forms individuals have previously turned to in times of disaster.

This paper examines how social media messages compare to traditional media’s take on a major news event in the content and framing of the the earthquake and tsunami that hit Japan. While this scenario is geographically situated in Japan, Twitter and other social media create a vast network that demonstrate some of the potentials web 2.0 tools offer for a global

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<sup>1</sup> Patrick Sherriff. *2:46: aftershocks : stories from the Japan earthquake*. (London: Enhanced Editions, 2011), 8-10.

conversation. During this disaster, support was provided from around the world, and online resources facilitated this connection. Not only that, citizen journalism took off; Individuals had access to phones and computers, and had the unique ability to document their surroundings. Computers in particular offered an efficient means of communicating to loved ones; subsequently, even major news outlets began to rely on social media for updates, images, and video. Other researchers have provided amazing visualizations of how the digital communication unfolded during the tsunami in Japan, creating a dramatic take on how these online interactions actually appear and connect globally:



Figure 1

Figure 1 “shows the volume of @replies going into and out of Japan in a one-hour period just before and then after the earthquake. Replies sent to users in Japan are shown in pink and messages directed at others from Japan are shown in yellow.”<sup>2</sup>This offers a unique way to think about how the digital platform has shaped response and subsequent discussion around a natural disaster. When a user observes the various Tweet messages as they scan their feed, they do not necessarily put them in the context of their geographic origins. It is understood that the messages are coming from different points on the globe, but actually understanding how the conversation is mapped illuminates the actual scale of the digital network. Millions of users now belong to this digital landscape, but what are people talking about? How does this quilt of information- a mosaic of insights and quips- fit into the larger body of published information? Perhaps it is more constructive to consider social media’s affordance as not merely connective, but also collaborative.

### **The Twitter Potential and Further Claims for Media Literacy:**

Twitter is often viewed as a frivolous pastime for the overindulged. What can an individual talk about in 140 characters other than what they ate for breakfast- and if that is the

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<sup>2</sup>Twitter Releases Visualizations Of Tweets During Japan Earthquake, Last modified 8/29/11, [http://www.huffingtonpost.com/2011/06/29/twitter-visualization-earthquake\\_n\\_887295.html](http://www.huffingtonpost.com/2011/06/29/twitter-visualization-earthquake_n_887295.html)

case, the target audience of “your concerned mother” is fairly limiting. While daily chatter is perhaps the most common use, one early study found that Twitter intent also fell into the categories of conversations, sharing information, and reporting news<sup>3</sup>. Recent major events, however, have begun to highlight the possibilities that a global digital network present to users. Swedish Informatics and Media scholar Christian Christensen has written about Twitter’s political pull noting:

Politics has to do with the power to define what is right and wrong, what is legal and illegal, what is legitimate dissent or treason. Traditionally, it has used the mainstream media (newspapers, television, radio, film) to disseminate these discourses, with access (in terms of production) limited to a narrow elite, and with content subject to varying political and economic agendas. Social media have made possible the presentation of alternative discourses to local and global audiences, challenging the orthodoxies of those in power.<sup>4</sup>

In light of its global impacts, the Twitter potential cannot be underestimated. Other scholars have taken on a similar question. In *Twitter: Microphone for the Masses?*, Dhiraj Murthy poses the question: “(H)as Twitter really produced a new space in which ordinary people meaningfully interact with ordinary people around the world who have rich insider accounts pertaining to diverse forms of socioeconomic life?”<sup>5</sup>

While ultimately Murthy seems to find that the medium is still highly stratified socioeconomically, the research also highlights the amazing potential of sites like Twitter. Murthy used the breaking news of the downed US Airways flight on the Hudson, and the report of the Mumbai bomb blasts in 2008 as case studies. In both situations, individuals with Twitter accounts broke news to the public and provided updates as events unfolded. It has turned anyone with a cellphone, which is presently 89% of the US, into a potential citizen journalist.<sup>6</sup> A recent PEW study found that, “46% of American adults now own a smartphone of some kind, up from 35% in May 2011; Smartphone owners now outnumber users of more basic phones.”<sup>7</sup> These smartphones offer users immediate access to the digital landscape, and a higher degree of connectivity than ever before. The power of the online network as a source for spreading news holds true for the 3.11 Earthquake in Japan. The research undertaken for this paper illustrates that there is in fact an interaction that takes place between users and major networks, and interaction that goes both ways, proving a mutually beneficial collaboration.

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<sup>3</sup> Akshay Java et al., "Why we twitter: understanding microblogging usage and communities." In *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis*, AMC (2007), 56-65.

<sup>4</sup> Christian Christensen. "Twitter revolutions? Addressing social media and dissent." *The Communication Review* 14, no. 3, (2011), 156.

<sup>5</sup> Dhiraj Murthy. "Twitter: Microphone for the masses?." *Media Culture and Society* 33, no. 5 (2011), 779.

<sup>6</sup> Murthy. "Microphone for the masses," 781.

<sup>7</sup> Aaron Smith. "Smartphone Update 2012." *Pew Internet & American Life Project*. (2012).

Now more than ever it is imperative to be informed on how to use these new technologies and incorporate them into educational platforms. Why should educators bother with this? Murthy notes that, “research has shown that print media readership is declining (Gulati and Just, 2006; Wahl, 2006) and that, as Vivian Schiller (cited in Emmett, 2008) of NYTimes.com observes ‘social media [...] is one of several essential strategies for disseminating news online – and for surviving [as a news organization]’”. Not only that, (in the United States) “nearly one in five internet-users aged 18–34 utilize Twitter or a similar social media/networking site (Lenhart, 2009).”<sup>8</sup> If this is how news is disseminated, it becomes an issue of social justice in making sure that this information is equally accessible.

### **Stories in the Wake of Disaster/Historical Disaster Narratives:**

Understanding the social response to natural disasters is not a new topic. Gregory Clancey, Associate Professor of History at the National University of Singapore, explores the issue of responses to earthquakes, and writes that:

*Natural disasters, by contrast, are moments in which the voices of experts mix with – and often have no privilege over – the voices of politicians, journalists, religious figures, and all manner of survivors. Everything is ‘out of order’ – nature and society both – and this makes things as messy for the chronicler of the event as for those who lived the experience. But if the ‘out of order’ is what one is looking for, then the natural disaster can be as socially and politically revealing as its purely political counterpart, the revolution.*<sup>9</sup>

In this paper, Clancey is referencing the Great Nobi earthquake from 1891, but his observations acquire new relevance during this digital revolution. If anything, the online network has amplified the fact that there exists a, “...cacophonous mixing of lay and expert voices... After the disaster, everyone is suddenly an amateur naturalist.”<sup>10</sup> Twitter allows for the citizen journalist and the professional news networks to interact and engage in ways that seem to level the playing field. Suddenly, citizen journalists are as qualified, or at least as valued, as any professional reporter on the scene. If anything, they are more valued for their ability to immediately comment, share, and capture images of these dramatic events. This research aims to further the understanding of how voices come to represent the narrative following a natural disaster, and how social media has opened up that conversation to the world.

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<sup>8</sup> Murthy. “Microphone for the masses,” 786.

<sup>9</sup> Gregory Clancey. “The Meiji Earthquake: Nature, Nation and the Ambiguities of Catastrophe.” *Modern Asian Studies* 40, no. 4 (2006), 914.

<sup>10</sup> Clancey. “The Meiji Earthquake,” 914.

### **Establishing differences in media:**

In understanding the differences between Twitter and traditional information sources, it is important to establish what Twitter is, and the affordances and limitations as a new media device. Twitter is a microblogging platform that allows users with an account to answer the simple question: “What’s happening?” The updates that users’ post are referred to as “Tweets”. A Tweet is limited to 140 characters, but can include links to pictures, webpages, or other lengthier sources of information. A Tweet can be directed to specific users by using an “@” followed by the individuals Twitter username/handle, i.e. @JaneDoe. The targeted audience is effectively anyone following a user’s account, but their Tweets can be labeled so that any user looking for “#MTVawards can find results from the MTV Music Awards. Hashtags provide a clean way to categorize the content. Users have a “feed” that fills with the Tweets from the users that they have subscribed to, or what Twitter calls “following.”

There is a clear divide between social media users and nonusers, but the exchange between the two cannot be discredited simply because an individual does not have a Twitter account. Senator Clinton picked up on this during the Iranian uprising: “Speaking a few days after the protests began, Secretary of State Hillary Clinton confessed that she wouldn’t know “a Twitter from a tweeter, but apparently, it’s very important” (Morozov 2009)<sup>11</sup>. Professionals now have a presence online, and today that often involves having a Twitter. Understanding current events and joining the conversation requires individuals to know how this new media tool operates in conjunction with other sources of media and information.

Following the 3.11 earthquake in Japan, the most used source of information was television, but the internet followed as the next highest accessed form of information. Media scholar Jung compiled some useful data during his examination of social media habits following the earthquake. In his 2011 study, Jung found:

Although television was still the dominant media, the scope of media that people accessed was broader compared to previous disasters (Hirschburg, *et al.*, 1986; Kim, *et al.*, 2004). Rather than relying only on mass media, people accessed portal sites, news sites and social media on the Internet to get information about the earthquake (Preston, 2011). According to the Survey Research Center (2011), the Internet was ranked the third (25.5 percent) after NHK television (53.7 percent) and commercial television (30.6 percent) as useful media for getting information after the earthquake. Mobile phone calls (19.8 percent) and mobile phone e-mail messages (19.9 percent) were ranked next.<sup>12</sup>

Conventional media has the benefit of having moderators that can verify facts. These editors are not going to allow for the spread of misinformation because they have a brand at stake. Twitter users on the other hand are not held to the same standard, and do not leave room for fact checking. While news sources available online, like CNN, might still do their best to

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<sup>11</sup> Evgeny Morozov. "Iran: Downside to the" Twitter Revolution"." *Dissent* 56, no. 4 (2009): 10.

<sup>12</sup> Joo-Young Jung. "Social media use and goals after the Great East Japan Earthquake." *First Monday* 17, no. 8-6 (2012). html.

maintain their credibility, users like “bieberholics” and “bubblesparadise” on the other hand are followed for reasons beyond their credibility to report the facts during a natural disaster- but most importantly, intent does not exclude them from the conversation. This is why there is value in exploring the link between the forms of media. The following underlines the process undertaken to observe the media’s varied content following the 3.11 Earthquake in Japan.

## II. Methods:

In order to explore the capabilities of social media as a tool for sharing a narrative, I conducted a coded analysis of a collection of tweets tagged with the words “Japan” and “earthquake”. These two terms were chosen because they provide the broadest points of reference. They encompass the location/place and the action for the event, narrowing the field to the most relevant Tweets without losing volume in terms of diverse commentary. It would be difficult to talk about the earthquake in Japan, without including those two terms somewhere in the Tweet. These coded Tweets were recorded for content that was labeled as emotional, social, descriptive, scientific, economic, and/or “other” in nature (“other” essentially turned into an indicator for sports, religion, historical, or an opportunity to be more specific than “social”). The “other” column was also used as a space to include links within the Tweet, but links were not included in the category count because they were referencing content coded in another category. These categories were drawn from a general observation of what seemed to be the broad themes addressed in any given Tweet.

For analyzing the past Twitter postings, a Twitter sorting site called Topsy was used to find and catalog relevant Tweets. Topsy allows users to search for tweets from selected dates, and can filter the results by keywords. It is a social analytics and search site that files through old tweets, videos, and photos that are available online. Analytic software, like Topsy, allows users to comb through “a massive ‘digital fossil’ of real-time social interactions,” from which users can serve as social paleontologists, able to reconstruct the form of the digital discourse that occurred following the earthquake.<sup>13</sup> The key terms, “Japan” and “earthquake” both needed to be present in the tweet for it to turn up as a result. The search field was limited to only Tweets and excluded photos and video across the web to provide a focused look at the Twitter-specific narrative. From these results, the Tweets were read for words or phrases that were emotive, social, descriptive, scientific, economic, or “other.”

Words associated with sympathizing, worrying, prayer, or other emotive descriptions were coded accordingly. Examples of such are “prayforjapan,” “send aid,” “hearts go out” etc. When a tweet contained phrases that described details, such as the damage, of the event, they were coded as descriptive Tweets. If the content was also scientific in nature, for example discussing the magnitude, radiation effects, or other scientific details, the content was also coded

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<sup>13</sup> Kazutoshi Sasahara et al. "Quantifying Collective Attention from Tweet Stream." *PloS one* 8, no. 4 (2013): e61823.

as scientific. Economic indicators were phrases such as “rebuilding,” “assessing costs,” “industry,” or references to “stock” actions.

For each Tweet, the source was recorded. Sources are the names of the Twitter user, which ranged from musical entertainers like Puff Daddy, to international politicians and major media news networks like bbcworld. The date and category of the tweet was also documented to create an understanding of the narrative along the timeline. Categories for the tweets included entertainment, news, international, organization, aid, tech, and religious. This provided a broader category to sort the general sources of the Twitter users. These source categories are not necessarily apparent from the usernames alone.

By examining a large volume of Tweets following the tsunami, a social narrative can be constructed, effectively demonstrating what the citizen and pop media response looks like following a major natural disaster. The Tweets that were analyzed ranged from the first posts (appearing on March 10th by U.S. timezones) to one year after the quake, March 11th 2012. Within this range, the focus was placed on the first day and month, one month after (April 2011), and 6 months after (September 2011). For each date, 100 random Tweets were analyzed, with some very limited overlap (coding of the same retweet, for example).

This coded information then was compared to the data obtained from 50 conventional sources. The breakdown included 20 coded scholarly articles, and 30 traditional media outlets following the earthquake and subsequent tsunami. To construct the traditional media narrative, articles were randomly selected from The New York Times, CNN, the BBC, and Critical Asian Studies. These sources were selected because they act as a popular means for individuals in the US to inform themselves on world events. These sources also appear as heavy social media presences on Twitter. Articles were only coded if they were included in the same one year period following the earthquake.

The scholarly articles underwent the same evaluation for the six key criteria: emotional, social, descriptive, scientific, economic, or “other,” and were also found using the same search terms: “Japan earthquake” in an attempt to keep the search criteria as uniform as possible. They were selected in the same one year time frame, and randomly drawn from the Lewis & Clark College Watzek Library database in order of what the database deemed “the most relevant.” Articles were limited to peer reviewed materials. The articles were scanned for terms that indicated any of the six categories, and labeled with the relevant categories, with many falling in more than one category.

By comparing the two sources, we are able to get a picture of how new technology differs from conventional sources in providing the narrative following a natural disaster. By looking at what topics come up in the coded analysis one can draw inferences around what Twitter users find relevant to share and what they are most interested in talking about- this research aims to offer the shape and sentiment of the digital narrative.



## A Complementary Source to this Analysis

Understanding the social media story of the quake is not a unique endeavour to this particular analysis. Within a week following the disaster, an inspired Twitter user turned to his Twitter account to elicit responses from those affected by the quake to compile content for a book. He planned to sell the collection in order to raise money to support the victims of the quake, but throughout the process, he realized he had a special opportunity to document what was happening at the time. He goes by his Twitter screen name, Our Man in Akibo. From his experience, the Twitter potential is further highlighted: "I have no big connections and yet I've been able to pull this all together. If I can do it, there's no reason why a lot of other people with a similar mindset couldn't do it too," he said.

Our Man in Akibo managed to put this document of the catastrophic event out for public consumption on March 25th, exactly two weeks after the quake. This was not the first time that people from Japan had turned to Twitter to document an earthquake. It had become common practice to document as soon as a quake was felt in Tokyo with a comment such as- "Oh felt that" or "shaking!" or "earthquake!" on a Twitter feed. However, the 2011 Fukushima earthquake was different in that the responses kept coming in, especially from outside Tokyo in areas where they were hit the worst. While it became the preferred method of communication for its convenience and ability to update concerned family members immediately- it ended up being one of the only ways that Japanese citizens could effectively communicate to their loved ones that they were alright, or update others on their situation. When the quake hit, mobile carriers were overused and up to 80 percent of the calls were not going through so many individuals turned to social media. The following analysis furthers the idea that a series of mixed voices can be captured to create an interesting and surprisingly full historical narrative.<sup>14</sup>

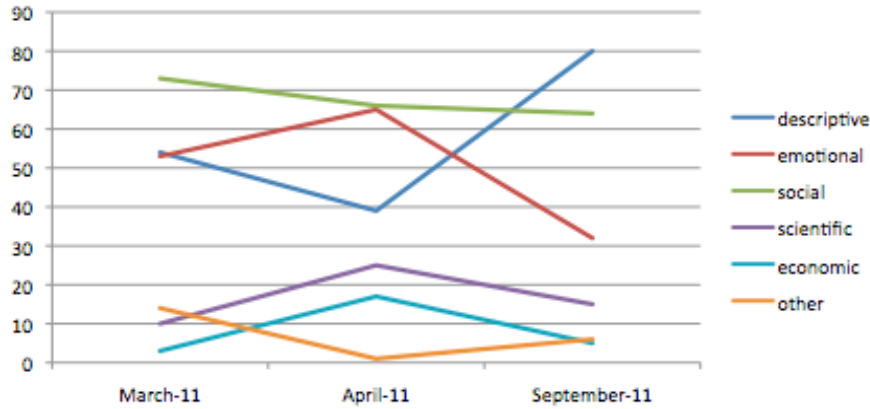
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<sup>14</sup> Sherriff, "2:46: aftershocks : stories from the Japan earthquake," 1-93.

**Data:**

Number of Tweets per Coded Category Overtime

Content Category	March-11	April-11	September-11
descriptive	54	39	80
emotional	53	65	32
social	73	66	64
scientific	10	25	15
economic	3	17	5
other	14	1	6



**News Sources:**

Emotional	Social	Descriptive	Scientific	Economic
18	25	20	14	13
60%	83.33%	66.67%	46.67%	43%

**Scholarly Articles:**

Emotional	Social	Descriptive	Science	Economic
3	16	14	13	7
15%	80%	70%	65%	35%

## Twitter Results/Analysis:

### Demographics:

The Twitter users that were coded consisted primarily of three groups: citizen, news, and entertainment, with various internet groups, scientific organizations, and technology blogs weighing in on the debate as well. The breakdown for these three primary groups over the first 6 months is as follows:

Date	Number of Tweets from citizens	Number of Tweets from news sources	Number of Tweets from entertainment sources
March 2011	5	43	23
April 2011	20	39	17
September 2011	52	13	11

From this data we can see that the life of the event as a piece of news greatly diminished among the coded Tweets over a six month window. During the first month, a majority of the randomly selected Tweets were from news organizations, with 43% falling in this category. To the next month, it remained high at 39%, but did experience a slight decline. Six months following the initial earthquake, the news coverage on Twitter seemed to plummet with only 13% of the Tweets coded being classified as from a news source. This suggests that it does remain on the radar, but there are probably other current pieces that capture the news' attention.

Also surprising is the rate of citizen tweets that were randomly selected over the course of 6 months. The first month found original citizen posts being dwarfed compared to news and entertainment outlets. By the second month, levels began to equalize with 20% of the coded material being attributed to citizen Tweets. Where things picked up was during the 6 month anniversary. In September, the conversation around the earthquake seemed to be dominated by citizen voices with 52% attributed to civilian Twitter users. Entertainment followed a similar trajectory to news with sources declining from 23%, to 17%, and down to 11% by September.

These potential patterns seem to suggest that the life of a Twitter conversation depends on if a user is looking for news sources or citizen insights. The most even distribution seemed to take place one month in. Users were willing to carry on the conversation even after the media had moved on to other, more timely, topics. While these numbers give an idea of what types of users were adding their voices at different times, it is worthwhile to examine the content of these Tweets. The following provides a breakdown of the coded content from the March, April, and September windows.

### A Snapshot: March 2011 (During the First Month)

Number of Emotional Tweets	Number of Social Tweets	Number of Descriptive Tweets	Number of Scientific Tweets	Number of Economic Tweets
54	53	73	10	3

From the cumulative tweets, certain patterns emerged in the sampling regarding what was being said, shared, and retweeted. For example, among the most widely shared information were livefeed links that news sites had available. It becomes a layered process for Twitter users to extract information on the earthquake. Users have to first receive the information on their Twitter feed, or search for it in the search bar. From the Twitter feed, the reader then scans an endless stream of tweets. If a Tweet with a link to a news site’s feed is of interest to the user, then they are brought to a second feed providing updates from a major outlet like Al Jazeera. This second feed is also constantly updating the information available around the event as well. It takes the viewer from one stream of a narrative to a potentially more focused stream of thought. Both are incredibly dynamic, with one containing a constant stream of all of your followed Twitter users, and another honing in on a topic of interest, like earthquake updates from CNN.

Given its limit of 140 characters, Twitter has a habit of redirecting users. Over 40% of the Tweets coded during the first month had links to other sources. It is through the redirection that a more expansive sharing of information can occur. It allows users to provide a short bit of context, or a hook, so to speak, for information that they believe is worth sharing. During the 2011 earthquake, there is a clear indication that people were looking for descriptive updates. During this time, 73% of the Tweets could be classified as descriptive in nature, compared to 54% social, and 53% emotional. Within this group of descriptive Tweets, approximately 10% contained basic data like the magnitude of the earthquake. 15% of the Tweets coded from the first 24 hour window contained some form of a warning of the tsunami. There was an advisory in the Pacific that was shared by westcoast users, a surf site, and various news organizations. This highlights the particular relevance of this event for these groups of users.

Of the tweets, 10% contained some form of scientific information. This ranged from information on radiation, to the magnitude, underwater sounds, and USGS geological updates. More than half the Tweets analyzed (53%) for this first month contained words or phrases that were coded as emotional. Emotive indicators were words such as: “prayer... our hearts... fragile... horrific, first death, terrible... please get to higher ground... shocking... bad feelings... survivors stories... heartbreaking... #packingupdakids... adopting child... donation... recovery... Will of God...”

Clearly the economic information is not what users are interested in discussing in the immediate aftermath of a disaster. The Huffington Post- a collection of endless internet sources, and cnnmoney, were the only two users that brought up costs in their Tweets. Proportionally, The

Huffington Post had most of their Tweets directed at other social, descriptive, and emotional points of interest. They post frequently enough that seven of their Tweets were coded for the first month alone. They were also responsible for providing one source of the limited scientific content coded. Rationally, it makes sense that social cues would keep a user from discussing monetary figures when such trauma is taking place.

### **A Snapshot of April 2011: The Following Month**

Number of Emotional Tweets	Number of Social Tweets	Number of Descriptive Tweets	Number of Scientific Tweets	Number of Economic Tweets
39	65	66	25	17

One month following the earthquake, the majority of Tweets were focused on the nuclear crisis, with many Tweets referencing the “Chernobyl level” of severity. Approximately 20% of the Tweets contained some sort of scientific data, with around 75% of those providing a link to an additional report surrounding the nuclear crisis. The prevalence of nuclear crisis information found in the coded Tweets further supports the research done by Joo-Young Jung at the University of Southern California. Jung found that, of the three major social media platforms in Japan, Twitter stood as the only one that

Twitter users consider social media to be the most helpful. Almost forty (39.1) percent of those who chose Twitter as their main form of social media on the day of the earthquake likewise chose social media as one of the two most helpful forms of media for understanding the Fukushima nuclear accident. On the other hand, 20 percent of Mixi (a Japanese social networking site) users and only 5.8 percent of Facebook users chose social media as one of the two most helpful forms of media.<sup>15</sup>

Jung’s research further supports the findings of this study in his exploration of the reasons that users chose the social media platforms that they did following the nuclear crisis. Jung notes:

For Twitter, on the other hand, the highest percentage of people said that they used Twitter to learn what was happening (75 percent), followed by using it to learn if people they knew were safe (68.8 percent), to let others know that they were safe (45.8 percent) and to make their views public (8.3 percent).<sup>16</sup>

It would be interesting to perform this research with an added category for “opinion” because, given the current data, it is hard to tell which Tweets would correspond with the goal of

<sup>15</sup> Jung, “Social media use and goals after the Great East Japan earthquake.”

<sup>16</sup> Jung, “Social media use and goals after the Great East Japan earthquake.”

making their views public. Many of these might stem from the “emotional” category, with conspiracy Tweets falling in this category as well.

The level of economic Tweets reached its peak during this April window with 17% of the content relating to some economic activity. At this time, some companies were beginning to restart production, many were suffering from the destruction, and others were looking at charity opportunities to help aid Japan. Not only did companies come out with special items to fund the relief, but celebrities also stepped in offering different memorabilia, or hosted events like benefit concerts.

### **A Snapshot of September, 2011: Six Months After**

Number of Emotional Tweets	Number of Social Tweets	Number of Descriptive Tweets	Number of Scientific Tweets	Number of Economic Tweets
32	64	80	15	5

Six months following the quake, there are limited but noteworthy changes in the data. The emotional sentiment decreased markedly from the first month, and again slightly from the April coding. Social sentiment remained high, with descriptive qualities again taking the focus. While the nuclear crisis is still a major contributor to the scientific Tweet count, more in depth information is now available to the public.

### **Scholarly Articles/Traditional Media Analysis:**

Random scholarly articles and a selection of traditional media publications from the New York Times, BBC, and CNN, were selected to see how the understanding of the event changed from the microblogging social snapshot to the formal written record. The information that is published in scholarly articles, one would assume, is far removed from the Twittersphere; They seem to be characteristically opposite in nature. Scholarly articles are hand-selected, peer-reviewed, criticized, researched, and methodical. This stands in contrast from a Tweet. Tweets are fleeting, immediate, and, due to their nature, are often characterized as requiring minimal thought. Much of Twitter’s negative association comes from people’s criticism that it is only a platform for individuals to broadcast their breakfast choices and may even cause individuals to be more shallow (Trapnell & Sinclair 2013)<sup>17</sup>. While that does account for perhaps a great deal of Twitter’s content, the analysis shows that does not necessarily hold true following a major event. Among the less thought provoking updates there are links to USGS, CNN, BBC, and other

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<sup>17</sup> Paul Trapnell and Lisa Sinclair, “Texting Frequency and the Moral Shallowing Hypothesis.” Dept. of Psychology, The University of Winnipeg (2013), 1.

news outlets. These are reliable sources, that were utilized prior to the creation of a social media network.

Where the scholarly articles come into play is with the long term picture. Publications seemed particularly relevant for economic information, and in the immediate window following the event, people not are discussing those numbers. Certainly there are costs associated with the devastation, but the only financial information framed was how to donate to help the victims. The emotional narrative dominates the content because that is what the public is concerned with. On the conventional media side, there was an early article published about Obama making a speech on the economic implications, but that didn't dominate the twitter picture. Scholarly articles also explored the implications that the nuclear energy had for oil and the energy market. Stocks didn't come up at all in the coded Tweets that were analyzed.

Online news, on the other hand, seems to occupy a middle ground between the Twitter conversation and the published scholarly articles. Information was made available from March 11th, the day that the earthquake occurred. The information becomes fuller over time, and more often than not the articles coded crossed many of the content categories. This comprehensive look still retains some of the emotion that is lost in scholarly content. However, the emotion is less personal when it is not linked to one direct user. Many of the articles published on CNN and BBC did not even list an author for the content. The reader relies instead on the name of the network as a source of validation than being able to investigate the author (which is fairly easy with scholarly articles).

### **Results/The Role of Traditional Media in a Digitized World:**

The findings from this coding examination suggest that Twitter can serve to compliment to the available scholarly and conventional media sources. The main takeaway from the findings seems to be that the social media does just as the title suggests, it interjects a social perspective that might not be afforded by other traditional publications. For the Twittersphere, however, the social narrative becomes the dominating thread. It is interjected before the link to the CNN article, or in the way a user describes the event. The BBC are not going to exclaim, "Holy cow!" or necessarily ask their viewers to pray for victims (it's too politicized and personal for a broadcast). As Clancy observed in his analysis of the 1923 quake, during a natural disaster, there exists an incredible merging of expert voices and people who then decide that they are an expert. In a way, when major news outlets turn towards these perspectives as primary sources, these new Twitter voices become validated.

Twitter not only support's Clancy's findings, it amplifies the concept to an extreme degree. Suddenly Puff Daddy's sentiment is juxtaposed with CNN's breaking report- and it seems just as likely that these two individuals will share the same photograph. Citizens that are witnesses to events can become the journalists that the BBC turns to. News networks had problems staying as relevant and current because their overseas offices weren't staffed to handle the coverage immediately following the event. Individuals that posted homemade videos and pictures would have hundreds of thousands of views before networks could get the same video or

story. They looked to these viral images and videos from citizens as their sources. This validates the citizen journalist contribution.

The information that is shared also is set apart from traditional media in that Twitter can, “generate a huge amount of time-stamped data, making it possible for the first time to study the dynamics of online popularity at the global system scale” (Ratkiewicz et al. 2010). Online news articles are admittedly timely, but they fail to capture the immediacy of an instant Tweet.

### **An Indepth Look at a Specific Tweet:**

A unique interaction that takes place on Twitter is between major news outlets and generic users. The networks can pick-up user submitted data and retweet it. When the information is retweeted from the news source, major Tweet users that subscribe to popular news networks can easily pick it up. When the influential user picks it up, the Tweet becomes accessible to a broader audience and rapidly disseminates. For example, when the “influential Twitter user” “BreakingNews” picked up a picture from an individual in Tokyo, it went viral. The users photo is classified as a Top 100 Tweet on Topsy’s Analytical site.



The comments under the photo represent a global community coming together in solidarity in the aftermath of the disaster. Examples include:

“From Turkey. I Hope You're Well My Friend. Evrything Will Be Ok.”

“...unfortunate catastrophe. In Uganda, we are having a terrible drought that may have wide ranging effects. [#americaSaveJapan](#)”



“Hi, it's your own pic? I'm the managing picture editor picture desk from the german news agency dpa; may we use the pic?”

“FRENCH PRESS PHOTO AGENCY LOOKING FOR PICTURES : PLEASE SEND TO [matt@visualpressagency.fr](mailto:matt@visualpressagency.fr)”

“From Colombia i pray for the people of Japan..GOD BLESS JAPAN !!!”

“(1/3) Dude, in Japan you have to live with this kind of things every day. In Colombia we have to as well...

(2/3) ...but you should be thankful because your people are prepared for this, we are not. If something...

(3/3) like this would hit us eventually we would be wiped out Be thankful and staySafe my friend Keep Posting”

The last sentiment from Columbia reflects one reason conveying a more complex thought can be difficult over Twitter. It took the user, Brightside\_Inc, three continued posts to get his point across. These posts are then read in reverse chronological order by viewers because the most recent post is found at the top of a user's feed. The ellipses are commonly used on Twitter to inform the reader that it is part of a series. For other extended posts, some users will number them each. (I've done this to clarify the point on the above feed). If the message consists of three posts, they would originally show-up labeled 3/3, 2/3, 1/3 down the users feed.

### **Applying Opinion Leader Theory to Influential Twitter Users:**

When analyzing the data, why are users compelled to ask the question: What does Puff Daddy think of the 3.11 Earthquake in Japan? The entertainment mogul does not list “amateur geologist” or “part-time news anchor” on his varied resume- which includes operator of a clothing line, music and television show producer, band manager, actor, restaurateur, and musical artist.<sup>18</sup> However, Puff Daddy serves as a major source of information dispersal. One of the Tweets coded belonged to Puff Daddy and acted as one of the most Retweeted among the sampled selection. During the presidential election of 1940, “the researchers were surprised to find almost no direct media effect on voters, instead finding “... that ideas often flow from radio and print to opinion leaders and from these to the less active sections of the population.”<sup>19</sup> While this particular example might seem antiquated, it is still applicable in the age of Twitter. Admittedly, opinion leaders now disseminate these messages through forms of media, but they still serve as the link between some individuals to information regarding an event. This

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<sup>18</sup> Errol I. Mars. "Black Profiles: Entrepreneurs and Executives: Sean Combs". *blackentrepreneurprofile.com*. Errim Styles Media Network. Retrieved April, 2013.

<sup>19</sup> Ronald S. Burt. "The social capital of opinion leaders." *The Annals of the American Academy of Political and Social Science* 566, no. 1 (1999): 38.

emergence of opinion leaders was similarly observed in the examination of spreading dynamics of Tweeted information during the ongoing May 15th (15M) movement in Spain.<sup>20</sup>

The power of the opinion leader can serve to create the spread of misinformation as well. Justin Bieber is the largest Twitter presence with over 33.3 million followers.<sup>21</sup> This has created a number of fan accounts and Bieber-related groups, each with thousands of followers. Among those coded, a message was picked up with conspiracy/apocalyptic themes writing messages along the lines of: “September 11 (NY) January 11 (Haiti) March 11 (Japan) who will be next?” While not necessarily “misinformation,” it does imply to the followers that Bieber somehow believes that the number “11” holds some negative power, and that other individuals are at risk. It propagates a false sense of fear and paranoia to masses that subscribe to sources indirectly associated with the pop icon. This ties into Burt’s examination of Merton’s Social Leader Opinion in terms of the contagion. Fans of Justin Bieber represent a group of individuals with a shared connection, frequently communicating through the form of Tweet updates. These Tweets may include any range of information, but it is safe to assume that much of the content posted will be related to Justin Bieber. This creates a sense of shared sentiment, causing users to feel a stronger connection as well.

They trade shouts and create multiple Twitter accounts for focused subgroups, tending them regularly, and team with other top believers to do it, positioning themselves at the head of the pack. They also claim to maintain special relationship with Justin, direct-messaging with him, and offer to relay other fans’ question via this exclusive channel.<sup>22</sup>

This exchange between alter (source of info) and ego (receiver of info) creates high cohesion. “Contagion by cohesion occurs because of socializing communication. The more frequent and empathetic the communication between ego and alter, the more likely that alter’s adoption of a new idea of behavior will trigger ego’s adoption.”<sup>23</sup>

### **Conclusions/Further Research:**

From this study, there are a few key takeaways that have larger implications:

*1) Citizen users play a notable role in sustaining the online conversation.*

This suggests that the further out from an event temporally, not only does the posting of information become less frequent on Twitter, it also becomes potentially less verifiable. Citizen users are not held to journalistic standards and public scrutiny that CNN, BBC, and the New

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<sup>20</sup> Javier Borge-Holthoefer, et al. "Structural and dynamical patterns on online social networks: the Spanish May 15th Movement as a case study." *PLoS One* 6.8 (2011): e23883.

<sup>21</sup> Alexis Kleinman. "Justin Bieber’s Twitter is Most Followed, Overtakes Lady Gaga." Last modified January 22, 2013, [http://www.huffingtonpost.com/2013/01/22/justin-bieber-twitter-most-followed\\_n\\_2525756.html](http://www.huffingtonpost.com/2013/01/22/justin-bieber-twitter-most-followed_n_2525756.html)

<sup>22</sup> Alexy Khrabrov and George Cybenko. "Discovering influence in communication networks using dynamic graph analysis." In *Social Computing (SocialCom), 2010 IEEE Second International Conference on*, pp. 293. IEEE, 2010.

<sup>23</sup> Burt, "Social Capital of Opinion Leaders," 39.

York Times are subject to. If an individual wants to learn about recent developments months after an event, it would be more productive to refer to a news source's website because it archives all of the published material, not just the Twitter posts, which serve more as a highlight reel rather than a comprehensive overview. While looking at Tweets that occur further out from the date becomes less viable, that is not to suggest that, farther removed from an event, there is not retrospective value in examining the Twitter conversation that took place in the immediate wake.

*2) Emotional, Social, and Descriptive data is most prevalent.*

Though the conversation tends to disappear because influential users stop posting about it in the Twitter community, looking back at the data generated directly following an event presents a wealth of social insight, coupled with legitimate descriptive updates. However, the scientific and economic figures never make a strong presence among the Twitter noise. The information is available, but proportionally it does not leave a large impact. If that is the information that a user is concerned with, they can look to very specific Twitter users (such as cnnmoney) or, perhaps most efficiently, turn to published articles. They offer a more comprehensive view, and if accessed online, they are easily sorted for only the most relevant information. Depending on how far out from the event an individual is, there is also an opportunity to refer to specific scholarly sources, which offer the richest scientific perspective on an event.

*3) Exchange is in fact a two-way street between.*

News outlets turned to citizen photos and updates to share the story of the 3.11 Earthquake, and users responded and retweeted to the major news sources in large numbers (consider the examination of the "breakingnews" Tweet). This supports other findings in current media trends that suggest the reliance goes both ways (Bruno 2011).

*4) Not all users are created equal.*

Examining the structure of the narrative shows that there are influential users that occupy more Twitter space. These celebrities and major (already trusted) networks serve as opinion leaders that disseminate messages to the majority of users from one major and often indirect platform. These sources collect the information from a primary source, and make it accessible to a larger (Twitter) audience. This has major implications for how messages can most effectively be transmitted. Opinion leaders could prove to be valuable assets for anyone looking to get a message out to many people quickly.

### **A Call For Media Literacy:**

Social media's narrative can act as a supplement to scholarly and traditional media sources to offer a broader, more holistic view. Online, citizen's tweets appear in tandem with CNN and Beyonce's comments. Surprisingly, it only takes 140 characters to convey incompetence, or even insight. It is important that students have the tools to determine whether the information they are receiving is credible, scholarly, opinion, or simply incorrect. One anonymous quote that circulates the web reads:

"The problem with quotes on the internet is that you never know if they are genuine."  
-Abraham Lincoln

This comically underlines a major predicament with the seemingly limitless availability of information online. In order to process the information online, students need to be able to filter it. With a Twitter or Facebook feed, information is constantly updating and there is not necessarily an inclination to verify sources. Also, what might read as suspicious, incorrect, or opinion to some, might be taken as fact to others. One website, Literallyunbelievable.org, is devoted entirely to individual's misguided posts on Facebook. The document instances where users incorrectly read articles from The Onion, a satirical news source, as serious and factual. The site's tagline reads: "Stories from The Onion as interpreted by Facebook". With even minor investigating beyond sensational headlines, readers could verify that when the Onion posts stories such as, "Bush Says He Still Believes Iraq War Was The Fun Thing To Do," they are writing satire. Much like on Facebook, Twitter interprets news in its own way. Literally anyone can chime in on twitter- which means that you are not necessarily receiving well thought out, or researched contributions. Many are simply a friend's passing thoughts. Each post serves a similar role as a news headline, which leaves room for readers to be misled.

Examining the content of the Twitter conversation following the Earthquake in Japan demonstrates that there is quality information, and benefits to following the event on Twitter. It uniquely allows users to express sentiments of support, sadness, or hope which are not commonly incorporated in conventional media's reporting while not losing informative and timely updates. Global users can interact to offer perspective and solidarity.

This study presents a very narrow view relative to the greater Twitter picture. Further research would benefit from tapping into powerful Twitter analytical software to process millions of Tweets rather than hand coding and searching through the masses of Tweets. However, this research provides a more detailed account, and serves to help categorize Tweets in the most accurate manner. While large analytical software can hunt for key terms for each category, it does not allow for best judgement to be used for each and every post. It would be beneficial to see if this microview held true for a larger compilation of Twitter sentiments. Regardless, this serves as one piece in understanding the new space that social media occupies among individuals' sources of information, and it demonstrates the timely, supportive, and emotive social discourse following a natural disaster.

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