Run Amok: Group Crowd Participation in Identifying the Bomb and Bomber from the Boston Marathon Bombing

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ABSTRACT

In this paper we tell a version of the story of the bombing of the Boston Marathon. At first, two online groups gathered images, video and textual information concerning the bombing of the Boston Marathon and shared these with the FBI and amongst themselves. Secondly, these groups then created mechanisms to conduct their own investigation into the identities of the perpetrators. Finally, the larger national media followed the results of these online group investigations and reported these as fact to a national audience. We choose Twitter as our data repository and conducted quantitative analyses of tweets sent during the Boston Bombing. The implications for not incorporating public crowd participation within the standard operating procedures of emergency services may result in either a loss of public confidence in the slow-moving nature of official response to uncontrollable, dangerous and irresponsible public and media participation that exacerbates the negative effects of any disaster.

Keywords

Boston Marathon Bombing. Crowdsourcing. Twitter. First Responders. Ethical Participation. Social Responsibility

INTRODUCTION

In this paper we present the case of the bombing of the Boston Marathon in April 2013 examining three roles; (1) official emergency responders and policing, (2) groups of online social media bystanders, and (3) the wider media. We examine these roles using data gathered from the media traces left behind by "virtual bystanders" to the event. The lens we apply to this examination is the concept of ethical participation and social responsibility of bystanders engaged with official emergency response. Social media have allowed an unprecedented level of participation in emergency response and crime scene investigation. It facilitates the capturing and sharing of information, videos, and photos between officials, bystanders and interested parties. The implications for not solving the problem of unprecedented access quickly and responsibly by and incorporating public crowd participation within the standard operating procedures of emergency services may result in either a loss of public confidence in the slow-moving nature of official response to uncontrollable and dangerous and irresponsible public participation that exacerbates the negative effects of any disaster.

Much has been made about the potential value of bystander data contributions via social media to police and emergency responders (Palen, 2008; Starbird, 2010). What is missing or under-reported in this discussion are four important elements: (1) policing and responders as requestors, (2) groups as participants, (3) media as truth mediators and (4) social responsibility. First, we find missing the role of responders requesting information from the crowd directly and providing a means for direct participation in the investigation. Second, we are just beginning to understand the second wave of contributions, those not made by immediate bystanders, but by organized groups of online participants who analyze the data produced by the original bystanders, and offer the products of their collective analysis to the responders. Thirdly, we note the powerful role the traditional national and international media have adopted for themselves as arbiters of truth as they filter the products of these online discussions and feed the results to the national stage. Lastly, this online discussion, intervention, and action have had significant real-world implications that demand socially responsible, careful, considered action for future emergency responders. The participants, both bystander and media, are participating in a policing investigation without the same training, constraints or awareness as officials have; however, despite that lack of training, these participants perhaps have more power and reach than official responders can obtain.

The exemplar for these considerations comes from the immediate aftermath of the Boston Marathon bombing. One group of 'virtual bystanders,' or those who observe an event via social media, collected and organized relief

for victims (Anonymous) while another group collected photos and videos taken of the scene (Reddit). Both groups created online mechanisms for the organization of survivors and analysis of images collected for anyone with a way to access the Internet. Reddit is well known as a popular news aggregator and Internet community. Anonymous is a loosely associated international network of hacker activists (or "hacktivists") originating within the online community 4chan. This group is well known for their disruptive capabilities and are mostly associated with "the trickster" trope in literature (Mimi, 2012). Both online groups collected data and images offered by bystanders present or near the area around the bombing (Stableford, 2013; Abad-Santos, 2013). Both groups created online mechanisms to share and analyze the data collected. Both groups used their large numbers and the affordances of the Internet to produce an answer to 'who was the perpetrator and what kind of bomb was used?'. Similarly, after the bombs went off, the FBI called for crowd participation to assist in the analysis of the deluge of data that poured in via help lines and social media directly (McCullagh, 2013, Marx, 2013).

Here is where we see the filtering role of the media play a part in how the police responded to the data and answers provided. In the case of Reddit, before the bombing, the group was respected – yet it reproduced and vilified the name of the wrong perpetrator with help from other media after a name was overheard on the police scanner. In the case of Reddit, the police followed up nearly immediately. In the case of Anonymous, the group was seen as dangerous and perhaps criminal--yet it worked to identify the backpack, bomb and perpetrators (Marx 2013). In the case of Anonymous, which may have supplied correct information, the police did not follow up due to the inability to assure provenance, legitimacy, and accuracy of the data. This group of citizens was not trustworthy in the public sphere (Mansfield-Divine, 2013).

In the remainder of this paper we will present a short summary of the events surrounding the bombing of the Boston Marathon and the surrounding investigation. We present a short review of literatures concerning the role of social media and crowdsourcing in emergency response and of bystanders in policing investigations.

CONTEXT: THE BOSTON BOMBING AND CROWDSOURCING TRENDS

On Monday, April 15, 2013, at 2:49 pm, the Boston Marathon was abruptly terminated when two bombs exploded 210 yards (190 m) from the finish line. These bombs killed three people and injured an estimated 264 others (Kotz, 2013). At least 14 people required amputations with some suffering traumatic amputations as a direct result of the blasts. Police, following emergency plans, diverted the remaining runners away from the finish line to Boston Common and Kenmore Square (LaGrone, 2013). The Massachusetts Emergency Management Agency suggested people trying to contact those in the vicinity use text messaging, instead of voice calls, because of crowded cellphone lines. Cellphone service in Boston was congested but remained in operation, despite some local media reports stating that cell service was shut down to prevent cell phones from being used as detonators (Waldman, 2013). Within hours of the initial event, the FBI called for bystanders to share images and video of the event (McCullagh, 2013). Images came pouring in and within three days the US Federal Bureau of Investigation (FBI) released photographs and surveillance video of two suspects, Dzhokhar and Tamerlan Tsarnaev. It was unprecedented but also predictable that the FBI decided to crowdsource parts of its investigation into the Boston Marathon Bombings (McCullugh, 2013).

It was predictable because the technology available to the public allows it to be used in conjunction with existing forms of crowd-based help. The idea of the police seeking help from the public during an investigation is by no means new. The earliest examples of public help are through police wanted posters. These wanted posters lead to crime tip lines as telephones became more readily available followed by television-lead call-in shows such as *America's Most Wanted*. Traditional tip lines call for the public to provide help regarding the identification of an individual based on a description or image, or to help identify elements of a crime. In the spirit of a new type of tip line, the FBI initially asked bystanders to contribute photographs and videos of the marathon in order to find better images of the suspects (McCullagh, 2013). This hybrid tip line and data repository worked well – thousands of photographs and short video clips were submitted to authorities. The practice of average citizens reporting on activities "on-the-ground" during a disaster is seen as increasingly valuable (Palen & Vieweg, 2008; Palen, et. al., 2009; Terpstra, 2012; Vieweg, et. al., 2008).

With the advent of the Internet and the maturation of social media, the ability to ask for help from larger and larger crowds has followed. The Internet had already begun to change official investigation by serving as a central hub of information that could allow responders to survey all relevant data from nearly anywhere in the world at any time. Data produced through social media has further influenced this change as these data are seen as more ubiquitous, rapid and accessible (Vieweg 2010). It is believed to empower citizens to become more situationally aware during disasters and coordinate to help themselves or others (Perng, et al., 2013; Palen, et. al., 2010). There have been several noteworthy uses of social media by policing organizations that have led to arrests. For example, when investigators sought information about rioters in Vancouver in 2011, they received 5,000 hours of video from the public, which helped them find suspects (Marx 2013). An annual survey conducted by the International Association of Chiefs of Police found that in 2011, 40 percent of agencies were

using social media to solicit tips from the public. In 2012 that percentage jumped to 56.8 percent (Glynn 2013). While this degree of adoption is significant, there has been little uptake by official responders and organizations to use social media (Tapia, et. al 2011 and 2013); however, after the Boston Marathon Bombing this may no longer be the case. The Boston Bombing became a unique scenario because it was the first time the crowdsourcing itself gained a degree of consciousness that allowed it to obtain a significant degree of communicative and investigative power.

What has typically been examined with regard to online bystanders could be described as "what are these groups doing?" Starbird and Palen, (2012) reported that certain characteristics of crowd behavior could act as a collaborative filter for identifying people tweeting from the ground during mass disruption events in Egypt. Starbird, Munzy and Palen (2012) also examined the Occupy Wall Street movement to demonstrate the power of crowd-based action. However, in neither case did they see the crowd as a coordinated group effort but as an analogue of the physical crowd itself. Starbird and Palen (2012) do discuss the emergence of what they term, "remote emergency operators" via social media but not in the capacity of crime solving. Munro (2010) discussed data collected during the earthquake in Haiti, and processed by online groups such as Ushahidi and Crisis Mappers. Ushahidi is an open-sourced, interactive platform for information collection, visualization, and mapping. Crisis Mappers is an online volunteer taskforce that provides ad hoc mapping needs around the globe during a crisis event each of these groups used a combination of crowdsourcing and computational techniques to collect relevant social media data, process and categorize the data, and plot the data on a map for the responding organization. While these online groups are examples of coordinated volunteer crowdsourcing, they are directed at humanitarian action, rather than truth seeking, investigation, or collective crime solving.

METHOD

Researchers have demonstrated the power of social media via the diffusion of news-related information (Kwak et al., 2010; Lerman and Ghosh, 2010). With the history of public participation of police investigation summarized above, a practical concern is that the web can facilitate or exacerbate crises by spreading misleading information at an incredible speed (Gonzalez-Herrero et al. 2008). News about a crisis can spread quickly and has no boundary or restriction (Bucher, 2002). There have been several studies recently, which directly studied the propagation of information through microblogging. For example, in recent work by Mendoza, Poblete and Castillo (2010), they found that immediately after the Chilean earthquake of 2010 there was significant evidence of the propagation of false statements on Twitter.

Each of those studies examined their data through a variety of means but none have managed to unify the interrelation of the media, emergency responders, and social media bystanders. As such, we are interested in the phenomena of virtual bystander participation in emergency response situations through social media as it relates to the traditional media. Our research questions are,

> *RQ(1) What does crowdsourced participation look like when it is "intelligence gathering?"*
> *RQ(2) What does crowdsourced participation look like when it is "crime solving?"*
> *RQ(3) What does crowdsourced participation look like when it is "group based/group filtered", rather than individual?*
> *RQ(4) What does crowdsourced participation look like when it is "media filtered?"*

We chose Twitter as our data repository and conducted analyses of tweets sent during the Boston Bombing. These data were scraped from the public Twitter search API using the hashtag #prayforboston, Boston, bomb, and bombs. There were approximately 23,642,905 tweets that account for nearly all tweets posted between the dates of April 15th and April 25th about the Boston Bombing. We chose to investigate specifically, how people responded to the activities of *Reddit* and *Anonymous*, who sought to position themselves as investigating and crowdsourcing hubs or authorities. These data were analyzed through an application of the Affective Norms for English Words (ANEW) dictionary for subject specific sentiment by hour for each day. The subjects that were examined include the keywords: 4chan (N=8484), Anonymous (N=14,753), Reddit (N=39,435), and Sunil Tripathi + Reddit (N=1270) – with the latter keywords being informed by the events, as we will explain below..

The ANEW dictionary contains approximately 1,034 words that represent different types of emotion. Each of these words is coded on a 9-point scale for positivity or negativity (1 = very negative, 9 = very positive) as well as how highly charged those words are (1 = not highly charged 9 = very charged). The type of emotion the word represents is called valence. For example, emotions like rage are considered low valence (a negative emotion). The charge of an emotion is called arousal and in the sense of rage, this emotion would be considered high on the arousal scale. This dictionary is as such that every word has an arousal and valence value. To perform this analysis, each tweet is analyzed algorithmically. What this means is that each word is compared to the dictionary and each tweet is averaged according to the sum of all words that appear in the tweet and in the dictionary of words. By adding an additional, temporal aspect to tweets, the sentiment behind the various facets

of 4chan, Reddit, and Anonymous can be displayed over the course of each day.

REDDIT: SENTIMENT CHANGE OVER TIME

To begin, we analyzed all tweets that contained the word reddit. Without context, we can say that these tweets maintained a steady value of arousal (intensity) and that the value fell between 5.19 and 5.87 on the ANEW 9-point scale. In order to gain a bit of clarity, each tweet was averaged for sentiment further coded as a positive, negative, or neutral tweet. The data below (Figure 1) indicates the output of that analysis. This is to be expected as the emotional reaction to an act as tragic as the bombing is going to stay high until a resolution is achieved. However, the timing of the changes in positive value and negative value indicate events that needed to be looked into further. Herein, an analysis and comparison of sentiment to event takes place. In the first few days of the Boston Bombing, Reddit concerned itself with intelligence gathering (RQ1, RQ2) and the organization of survivors.

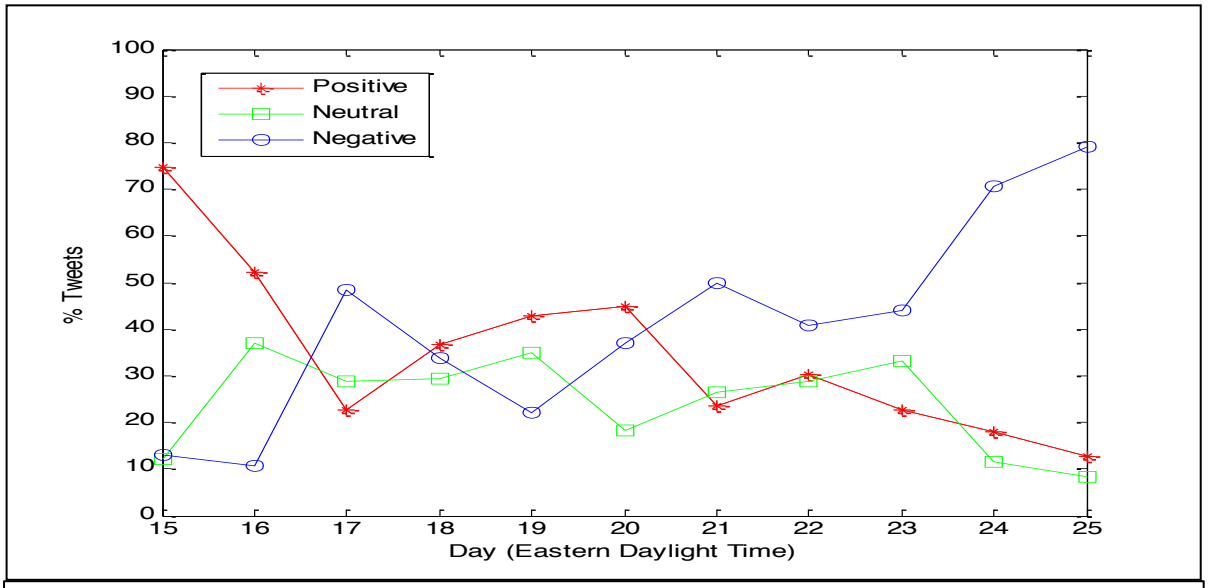

Figure 1 - Sentiment about Reddit - April 15-25

April 15th – Immediate Response Sentiment

This group of Internet-based bystanders gathered information (RQ1) and disseminated it to those in Boston who knew of or belonged to Reddit's community, as well as anyone who would listen. Reddit members worked to organize pizza and water for all survivors they could communicate with, including the Boston Police Department. They also worked to help get loved ones in touch with each other through word-of-mouth and a centralized google document of known survivors and their status. Our analysis through the ANEW dictionary indicates that public sentiment of Reddit began astoundingly high because of their speed and efficacy in arranging survivors and cataloging names. In addition, it was felt that Reddit was providing the best coverage of events on the ground.

> *[TWEET] lol Boston Police Not Tryna Use Their Walkie Talkies Cuz They Know 80k+ People Listening To Them... #reddit*
> *[TWEET] Surreal listening to Boston Police scanner (http://t.co/cCtF67Atzh) live as this is all going down in #Watertown. Twitter Reddit WCVB too*
> *[TWEET] Sorry @cnn but best coverage is on reddit - live Boston update thread.*

However, as time went on and officials did not address the bystanders collecting information, this positivity was replaced with distrust and increasingly negative sentiment. Many twitter residents began to feel that Reddit had overstayed their welcome (RQ3) as their efforts to maintain a stream of information relevant to the investigation seemed to begin to fatigue the audience. In the meantime, media outlets began to mine Reddit for data and eventually gave airtime to un-verified data about bombing suspects like Sunil Tripathi who had tragically committed suicide days before the bombing took place. When those news sources were proven to be incorrect, the media turned to a new portion of the data Reddit or Anonymous collected. This left the news surrounding the investigation with an aura of confusion and uncertainty (RQ4).

April 19th – Sunil Tripathi and Anti-Reddit Sentiment

Valence (positive or negative emotions) skewed suddenly into the range of negative emotions beginning on April 19th. Reddit's reputation would not rise again due to a particularly tragic series of media augmented events surrounding the bombing suspect Sunil Tripathi. Tripathi was a 22-year-old Brown University student who was labeled by Reddit as a suspect in the Boston Bombing along with another name Mike Mulugeta. When Reddit learned he was missing and had been reported as missing as early as the 16th of March, a search began with the media, reporting that Tripathi was a suspect. While the intent of this was not to create a witch-hunt, the ensuing media blitz created a public image issue that Reddit may not ever recover from. Here, an example shows just how charged sentiment against Reddit became.

> *[TWEET] I am actively angry about irresponsible amateur sleuthing on reddit/4chan/etc about Boston. Its disgusting and dangerous.*
> *[TWEET] Much angst over Reddit misidentifying Boston bombing suspect. Did feds do the same thing in the ricin case? http://t.co/AAogimNJLH*
> *[TWEET] Why is everyone giving Reddit and 4chan grief for not catching the Boston bombers? Theyre teenage armchair detectives whatd you expect?*

The FBI, at 12PM on April 19th, 2013, officially announced that Sunil Tripathi was not a suspect. Beginning with this announcement and during the rest of data collection, sentiment about Reddit went from positive to very negative. This trend is also reflected in the "neutral" sentiment line as it rapidly declines after the 19th of April. On April 24th, Sunil Tripathi was found dead in the Boston River. The twitter data reflects the spike in negative sentiment that followed.

ANONYMOUS: SENTIMENT CHANGE OVER TIME

Like Reddit, Anonymous was also gathering information, though it was of a different kind. This group was interested in the presence of two different strangers that the media did not seem to be reporting about (Sheets, 2013). The first was an elite mercenary group present near the finish line before the blasts and the second was a person on the roof of a building who was unintentionally captured in a picture taken right after the blast. In addition, Anonymous was also interested in its own brand of Internet crime solving.

This crime solving agenda involved the timing of the blast close to the passing of the Cyber Intelligence Sharing and Protection Act (CISPA) legislation which granted the government a variety of powers to invade the privacy of all Internet users. These two acts (focus on conspiracy images and timing of legislation) are related to the image Anonymous seeks to present. Unlike Reddit, the story of Anonymous begins with a stigma that served to inform public reaction to their participation during the Boston event.

Anonymous is a collective of interested computer-augmented activists that have most recently been labeled as hacker activists or "hacktivists." Anonymous came to power through a worldwide protest of the Church of Scientology but gained the world's attention as they worked to undermine the negative press being used to discredit and destroy the website Wikileaks. While successful, the method through which they pursue their activism have lead to Anonymous being labeled as "tricksters" and "juvenile" by both network security experts as well as the press. This predisposition to mistrust Anonymous is evident in the sentiment analysis of tweets about them over the course of the event.

April 15th – Immediate Response Sentiment

Unlike Reddit who participated in the event as a reactionary measure to possible community members being present in and around the bombing, Anonymous was watching the Boston Marathon very closely before the bombs went off. This was due to a post made on the website 4chan that predicted the bombing just a few days before (Sheets, 2013). It was felt that this event would allow for the government to perform a few acts they would not be able to normally because of the chaos surrounding the event. These events are often referred to as "False Flags." A False Flag is typically referred to as an event that occurs covertly (in this case, the Boston Bombing secretly being a US military operation) that allows for another event to occur (Jones, 2010). Anonymous believes that the act of blaming a domestic act on a foreign national can direct attention away from crucial, controversial legislature like CISPA.

As seen from the valence and arousal in figure 2 (below), the tweets reflect events. However, this illustration indicates a much more varied and lower degree of valence. This is indicative of the baggage Anonymous brought with it to this event. The similarities of the two groups in their actions is indicative of the efforts required by the event. Like Reddit, Anonymous began to produce possible solutions to the Boston Bombing mystery and on the 18th and 19th after the FBI produced the photos of their suspects it looked like they were on the right track. However, like Reddit, Anonymous got caught up in the anti-crowdsourcing sentiment that came through the misappropriation of blame for Sunil Tripathi. Anonymous is a group with very low public trust to

begin with so their tweets began with a very low valence (negative emotions) and never escaped it. Interestingly, the valence for this group of Internet tricksters rose in a similar fashion to those of Reddit. The difference between Reddit and Anonymous during this event is an interesting one and is something of a dialectic of what is good and bad about massive public participation via online tools.

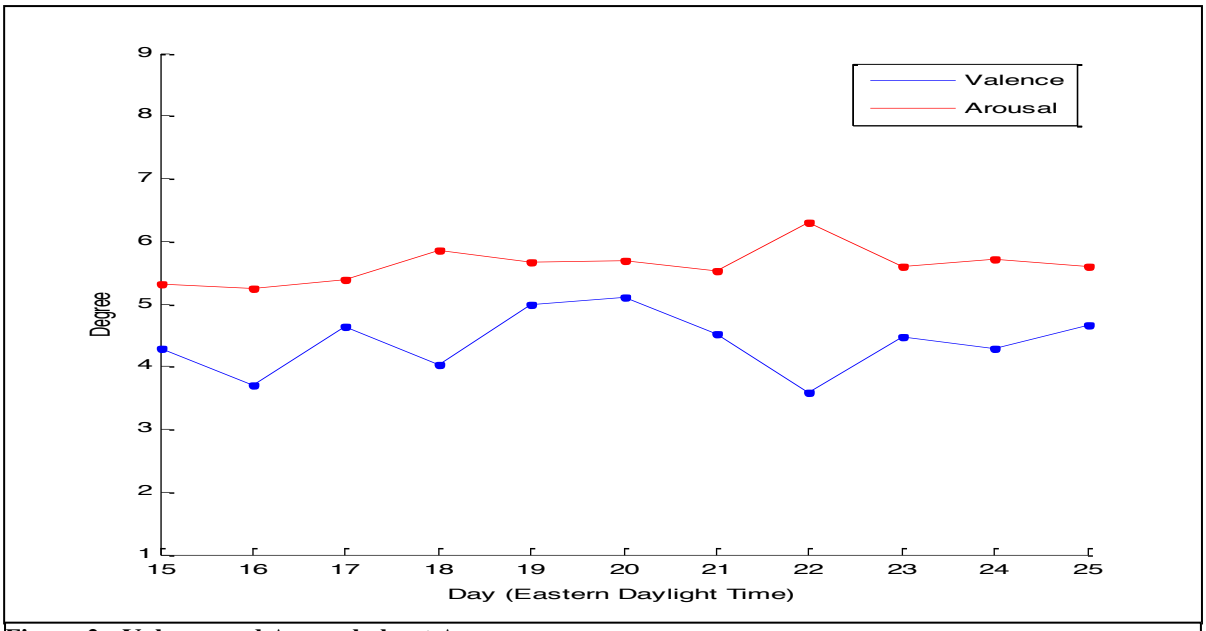

Figure 2 - Valence and Arousal about Anonymous

During the Boston Bombing, Anonymous concerned itself with a picture that stunned many media outlets. This picture was of the Boston Bombing immediately after the bombs went off. The stunning portion of this picture was that a figure on a rooftop could be seen walking away from the blast on top of a nearby building. This activity prompted the involvement of Alex Jones of www.infowars.com who then began to call the Boston Marathon a "False Flag." To Jones, the bombing was a giant waving pretend flag in an effort to distract the public while Congress sent through the controversial Cyber Intelligence Sharing and Protection Act (CISPA).

April 17th – The Westboro Baptist Church Confrontation

While Jones and the Internet scoured crime scene photos to prove the existence of a "False Flag" operation, another battle began via twitter with the Westboro Baptist Church. On April 17th, 2013, the Westboro Baptist Church indicated that they felt that the bombs exploded when they did because God had ordained the gay-marriage laws of Massachusetts a sin against nature. Through their twitter account, the WBC indicated that they would be protesting during the aftermath at all funerals and memorial services for the deceased. Anonymous stepped in, threatened them with an attack similar to what the WBC had experienced from Anonymous during the Sandy Hook Elementary aftermath, and waited to see what the WBC would do next.

In figure 2, we can see that the valence of tweets about Anonymous is much lower than those of Reddit (below 5 as opposed to Reddit's consistent score above 5.5). This is indicative of Anonymous' past activities as an unpredictable, often interfering entity during large-scale public events. However, valence, while mostly negative, goes up during the days that news stories about Anonymous' threats against the Westboro Baptist Church. For example:

> *[TWEET] There is justice. The Westboro Church which wanted to protest the funerals of the Boston Marathon victims has been hacked by Anonymous.*
> *[TWEET] Hacking group warns Westboro not to picket Boston Marathon funerals: The online hacker organisation Anonymous ... http://t.co/ImQW6T1Wgq*

The good will gained by fighting the WBC began to fade quickly. As you can see in figure 2, Anonymous' valence value went to its initially highest point before good will was decimated by the tragedy surrounding Sunil Tripathi. While Anonymous' actions during this event are closer to conspiracy theorists than Reddit's crime solving attempts, the fact that these two units are so closely aligned in the public's eye is demonstrated by exceedingly similar movements in positive versus negative emotions throughout the crisis response period.

DISCUSSION

In this section we organize our discussion around our research questions. Our first research question was *"What does crowdsourced participation look like when it is "intelligence gathering?"* In the case of the bombing of the Boston Marathon the FBI asked the public to share its images and video of the event (McCullagh 2013). They created a mechanism for crowsourced intelligence which took the form of an automated tip gathering service. This form of participation is seen as a resounding success and resulted in the identification and eventual capture of Dzhokhar Tsarnaev. The FBI made the decision to set up a page where people could upload potential evidence, but before this was complete, citizens had already set up their own page. While the data itself became a problem, it was not because of the crowd, it was seemingly due to the lack of interaction between the investigation teams and the crowd. Within hours of the event, Reddit knew more about the situation at ground zero than emergency responders did – and these bystanders were not even physically present. The freely broadcast police band was focused on and scoured for names of victims, names of suspects, and any news that could be gleaned out of the confusion. Internet-Relay chatrooms on the freenode IRC server began immediately at #bostonbombing and served as a realtime chat between 4chan, Anonymous, and Reddit. Along with these communication tools, other Redditors began collecting as many pictures, videos, and news stories of the event. All of this was done before official response could be established and stabilized.

Our second research question was, "What does crowdsourced participation look like when it is "crime solving?" Instead of being simply the supplier of information, the crowd also shares information with each other. This has led to crowdsourced crime solving. The crowd also sought to participate in the investigation as detectives, which can be seen as a failure (Gayomali 2013). The crowd's efforts forced the FBI to release information earlier than it had planned. The interesting part of this particular research question is the disagreement between Redditors who say that Sunil Tripathi and Mike Mulugeta were identified as suspects on the police scanner and police who state that these names were never mentioned directly. This disagreement is something to be investigated further as it resulted in four individuals being incorrectly identified as suspects (Gayomali, 2013). The name Sunil Tripathi gained more traction when the FBI released photos of suspect one and two (McCullagh, 2013), collages of side-by-side comparisons were posted on the web comparing Sunil Tripathi to Suspect 2 (Reddit thread "is"). The speculation lead to several witch-hunts. Dozens after dozens of notable news agencies, reporters, and investigative journalists, re-tweeted the misinformation thousands of times. Redditors were proclaiming an early victory: "If Sunil Tripathi did indeed commit this #BostonBombing, Reddit has scored a significant, game-changing victory." Greg Hughes gave advice: "Journalism students take note: tonight, the best reporting was crowdsourced, digital and done by bystanders. #Watertown." Others added: "This is historic Internet sleuthing." "Reddit solved the bombing. Before the Feds Solved the Bombing." The only problem was that the four accused males, all of whom were young minorities, were each completely innocent. The last identified, Sunil Tripathi, committed suicide four days earlier, was later found dead (Chuck, 2013). The misidentification of Tripathi led to questions in the media about whether crowdsourced investigations should be prevented in future, citing the harm caused to people like the family of Tripathi, as well as other wrongly identified suspects who now feared for their safety. In essence, is the participation of these participants ethical given the damage done during the Boston Bombing Investigation?

Our third research question was, "What does crowdsourced participation look like when it is "group based/group filtered", rather than individual?" Within hours of the bombing, Reddit had organized a number of public projects during the Boston Bombings before initial responders even had a chance to truly respond and they did this by skirting around bureaucracy. Members of Reddit who were in Boston, near the event offered everything to other Redditors and those nearby. This included a place to stay for the night (private residences, apartments, or couches), food, and on-the-ground person finding. Almost all of this organization was done voluntarily but also automatically. Volunteers would post comments with data and that data would be organized, cleaned, and placed into spreadsheets without much in the way of communication. The initial thread of the bombing was an initial collection of Tweets from reporters and early listening of the police band. A justin.tv stream was put up of the police and EMS band after it began to suffer enormous bandwidth issues. By 5:50PM, almost three hours after the event, Reddit and other Internet related services like Google's person finder were up and running. By 7:04 PM, Reddit had established a spreadsheet through google documents of places to stay that included Redditors opening their houses to other Redditors. The Reddit threads contained very detailed information concerning evidence publically announced and even some evidence that was not announced. Reddit out-performed the mainstream media and beat them to a number of pieces of information. Reddit also managed to organize food and shelter for residents of Reddit who were in Boston to participate in the Marathon or to watch someone participate. Reddit was able to maneuver themselves into assembling and establishing credible data very quickly. Reddit fared better than Anonymous because of a more conscious community and a system where true information could be "upvoted" and false information could be "downvoted." Reddit quickly established text-based communication, a database of those on the ground, photographic evidence of the crime

scene, food and shelter for those who had an account on Reddit, and a timeline of events that was unmatched by the rest of the media.

Our fourth research question was, "What does crowdsourced participation look like when it is "media filtered?" The FBI itself issued a statement cautioning media outlets on announcing leads without verification from them (FBI timeline). Some argued that they are unstoppable due to the nature of the Internet, with the only hope being that errors that cases such as this would lead to future caution. Reddit issued a public apology (Hueypriest, 2013). It is unknown if the FBI was ready to receive the deluge of information the crowd was willing to give but that the FBI never announced that this information should stop; rather, that the news media should be more responsible with their reporting. We feel that the participation was ethical wherein the media's treatment of that participation was not.

CONCLUSIONS

In this paper we have told a version of the story of the bombing of the Boston marathon. Our story is told in three parts. At first, two online groups gathered images, video and textual information concerning the bombing of the Boston Marathon and shared these with the FBI and amongst themselves. Secondly, these groups then created mechanisms to conduct their own investigation into the identities of the perpetrators. Finally, the larger national media followed the results of these online group investigations and reported these as fact to a national audience.

Considering information gathering, this extended traditional policing tip line moves into the realm of crowdsourcing where scale, scope and speed brought incredible results in the form of thousands of images and videos to officials. Considering crowdsourced investigations, the online groups brought to bear new tools and massive numbers of users with a combined processing strength not possessed by officials. This processing led to results with unprecedented speed. Unfortunately, we learned that the crowdsourced investigation was fueled by misunderstandings and misinformation and was further amplified by the nature of retweeting and social media. All groups identified the wrong people as perpetrators. This alone would have shown the limitations of crowdsourced investigations, but would not have led to the persecution of wrongly identified men. In the age of social media, the actions of online bystanders have become more problematic than the inaction of physically present bystanders (Fletcher, 2007). Internet-based communication technologies have allowed the technologically literate to gain unprecedented oversight during crime scene investigation – especially when the event is large in scale. Most alarming here is the influence both groups had on the official responders. They pressured the FBI to abandon their desired time schedule for releasing information to the public because of the accelerated nature of the parallel online group investigation. They also provided leads to the FBI, which were accepted and responded to as if they had come from a traditional vetting process.

Perhaps most important here is the problematic role of the national media. The national media periodically took results from the online group processes of Reddit and Anonymous and treated those with the national media's authority as though they were from official processes. They published these results as fact, influencing the official responders and the public. This brings to the fore the concept of media responsibility. The title of this paper uses the phrase "run amok" as word play regarding a marathon. However, it has double meaning. We also find that the national media has the potential to run amok with information gleaned from online sources. We interpret running amok to be to boldly and heedlessly run into conflict in a frenzied, uncontrolled way. Amok in this case can be seen as allowing the fear and intensity of the bombing and the speed and massiveness of the Internet forums, to cloud the judgment and practices of media producers. The media can run amok shaping a public understanding of events that is not accurate.

We note the powerful role the traditional national media have adopted for themselves as arbiters of truth as they filter the products of these online discussions and feed the results back to the national stage. This online discussion, intervention, and action has had significant real-world implications that demand socially responsible, careful, considered action. The participants, both bystander and media, are participating in a policing investigation without the same training, constraints and awareness as officials, but perhaps with more power and reach. The right to participate in public dialogue has always come with the price of social responsibility. One cannot cause hate or fear or damage with one's words, even in an open society. While this practice is not yet institutionalized among Internet forum participants, it has been part of the code of conduct for broadcasters and journalists for decades. Media must inform and expose and perhaps entertain, but they also must provide privacy and dignity and not cause additional harm.

There have always been significant rewards in the media industry to be first to broadcast a story of high interest or value. Internet technologies have not changed this desire, but have amplified the quest for the goal. The 24-hour news cycle of cable television was just the beginning of a trajectory, which now includes citizen reporters and public participation through forums, comments, images and video. The news cycle has become a nowcast

rather than a broadcast at instantaneous speed with broad participation. *New York Times* editor Greg Brock said: "In the Twitter age, the pressure is worse than ever to be fast – it's become more difficult. Some of the pressure is coming from readers." The speed and participation have changed, but the need to responsibly report the news has not. Broadcasters and journalists must create a new code of conduct that establishes clear values, shows leadership in embedding those values, and establishes policies and processes for ensuring they don't fall short of them. The media must resist the lure of speed, strive to report only what is correct in a fair and balanced manner, and must remain faithful to its social responsibility.

The traditional media could play an enormously valuable role here by separating fact from fiction and providing verified, trustworthy information. Instead, most outlets just repeated false claims made online – providing a megaphone to erroneous statements. Gathering all information, even irrelevant information, was part and parcel of the investigation, of any investigation. The media, should they be involved with researching social media like Reddit at all, should receive more training into how to distinguish false leads from positive leads. Official response, controls and maintenance with these entities could control the flow of information and perhaps provide a means through which to address mistakes on both the bystander and media sides of an investigation. This case study displays the need for such controls.

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