

Information Flows in Events of Political Unrest

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Abstract

Social media, as the set of tools typified by blogs and other social networking platforms, is creating a user-generated dynamic, complex information ecosystem. The flow of information across multiple platforms means that traditional media gatekeepers (newspapers and other 'mainstream media') become just one of many pathways by which we learn about and make sense of new information. This research note reports preliminary results of a study based on a dataset of more than 65 million tweets related to the Occupy Wall Street movement, coupled with searches of LexisNexis, to examine information about six events related to Occupy sites in Maine, New York City, Oakland, and the University of California - Davis. The study seeks to understand the relationships among newspapers, blogs, and Twitter as users of each platform report and comment on these events. The preliminary results suggest that the platforms perform distinct but overlapping roles at different periods in the information diffusion life cycle.

Keywords: information flows, social network, Occupy, Twitter, social movements

Introduction

Recent political unrest and social movements are characterized by multiple, diverse practices, sites of protests, and are set in varied contexts (e.g., the revolutions frequently termed "The Arab Spring"; the *Indignados* movement in Spain; the tents movement in Israel; and the Occupy movement in the United States). One unifying element is the growing use of social media and ways in which social media and traditional media interact. This research compares information flows in the mainstream media, Twitter, and the blogosphere using six cases, each an event related to the Occupy Movement in 2011 and 2012, and each fitting into one of three event types: 1. Serendipitous events, not planned by either the protesters or authorities; 2. Events planned by authorities; 3. Events planned by the protesters. We posit that the type of event (planned or unplanned) can create distinctive information flow patterns among the three platforms.

This initial work is part of a broader project that addresses questions such as how information gains the attention of publics (e.g., through traditional media, alternative media like blogs, or an emergent mix of these in conjunction with social networks). In an interconnected world, we expect a mix of information flows and sharing practices among these platforms. In such an ecosystem, what is the interplay between and among these platforms? What kinds of events influence where information will first emerge? Is there a connection between the type of event and the way information is distributed? Answering these questions will help us to further refine our understanding of how communities create meaning from information and consequently influence attitudes.

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Information Distribution and Social Movements

The pervasive use of social networking sites has provided an opportunity for researchers to study information flows and the roles of information platforms during political unrest (Gaffney, 2010; Lotan, Graeff, Ananny, Gaffney & Pearce, 2011). An increasing number of researchers are examining information flows in networks. Twitter and blogs are associated with rapid information flows across information-sharing networks, and well-positioned influencers can shape to a certain degree how information flows (Hemsley & Mason, 2012; Lotan et al., 2011; Nahon, Hemsley, Walker & Hussain, 2011). Gomez-Rodriguez et al. (2012) trace paths of diffusion and influence through networks over which contagions propagate, and Leskovec et al. (2007) describe the distribution of information forwarding chain topologies in the blogosphere. Nahon and Hemsley (2011) examine the factors that influence blogs to co-link to videos, thus driving information diffusion.

In this work we seek to add to the nascent body of literature that focuses on information flows in the context of collective action or social movements. Lotan et al. (2011) studied dissemination of news via Twitter during the Tunisian and Egyptian revolutions in 2011 and identified six types of *roles* that impact the practices of information distribution. Constanza-Chock (2012) examines media practices during social movement activities, focusing on the Occupy movement and Mazzone (2011) provides a visual comparison of newspaper coverage of the Occupy movement with its presence on social media sites.

This research note presents preliminary results from a study that examines the life cycle of information sharing about selected "Occupy" events through Twitter, blogs, and mainstream media (printed and online). Our research addresses the following questions: in a time of unrest, how is information about a given event distributed via these channels? Does one platform tend to distribute information earlier than others? Can we see evidence of information moving from one platform to another? We address these questions by examining six specific events.

Research Methods

Data Collection

Twitter data are drawn from the corpus of 65 million tweets that the Social Media Lab at the University of Washington¹ has been collecting since October 2011. The data were collected using over 330 Occupy related search terms and Twitter's Streaming API. Mainstream media and the blogosphere data were drawn from LexisNexis.

We selected six events to compare as cases, each of which fits into one of our three event types: 1. Serendipitous events, not planned by either the protesters or authorities; 2. Events planned by authorities; 3. Events planned by the protesters. We posit that the type of event (planned or unplanned) will affect the information flow among the three platforms (Twitter, mainstream media and blogs). See table 1 for description of these events.

¹ <http://SoMeLab.net>

Table 1
Data Collected Events

Type of Event	Name of Event	Date	Description
Serendipitous	Bomb in Occupy Maine camp	10.23.2011	A bomb was thrown early in the morning at the Occupy Maine camp
Serendipitous	Scott Olsen injury	10.25.2011	During the clearing of the Occupy Oakland camp, Scott Olsen, a veteran, was hit in the head by a police tear gas canister and injured
Serendipitous	UC Davis pepper spray	11.18.2011	University police pepper spray a group of seated demonstrators during an Occupy movement demonstration
Planned by protesters	Occupy Oakland port shutdown	2.11.2011	A demonstration event planned by the Occupy Movement to shut down the Port of Oakland
Planned by protesters	Marking six months to the Occupy movement	3.17.2012	Occupiers attempted to re-occupy the Zuccotti Park to mark the six month anniversary of the Occupy movement
Planned by authorities	Clearing the LA Occupy camp	11.30.2011	Police moved to clear the LA Occupy camp just after midnight

The Approach

We used an iterative approach to extract the data from Twitter (our collection) and from LexisNexis news and the blogosphere. We first identified keywords we thought would produce the best search queries for each event. To refine our search terms, we selected two days of tweets after a given event and conducted a preliminary manual content analysis, identifying the most common event related words used in tweets. We used the same keywords for our final queries to extract data from the SoMe Lab Twitter archive and LexisNexis. We bounded all six events temporally to 48 hours before and 10 days after the event.

Precision (estimating Noise). The Twitter data included hundreds of thousands of tweets, many of which we consider *noise*, unrelated to the event. To estimate the volume of noise we randomly sampled 1000 tweets from each event-dataset and manually coded each tweet as related to the event (related) or unrelated (noise). After removing the noise we compared the remaining Twitter data samples with the news and blogging samples. We posited that the random sample had the same temporal pattern (number of tweets per hour) as the actual data. We then produced synchronized plots for each event to permit a visual comparison. Future work will include more cases, larger samples and a time-series analysis.

Preliminary Findings

Figure 1 (below) plots the information flow of posting information related to the event in Twitter, blogosphere and mainstream media over a period of twelve days.

Findings from figure 1:

1. *First to appear*: it is clear that for serendipitous events and events planned by protesters Twitter activity appear before the mainstream media (online and printed) and blogs. However, for the event planned by the authorities, the mainstream media discussed the event well before it happened.
2. *Life Cycle*: The *life cycle* of information distribution looks similar in all three cases when events are unplanned (serendipitous). However, planned events demonstrate different patterns. For events planned by authorities, tweet volume quickly ramps up to a spike and then decays and goes flat as interest in the topic fades away, whereas mainstream media and blog volume occurs before, during, and after the event, though somewhat unevenly. In events planned by protesters, the life cycle is similar across the media platforms but news and blogs lag behind Twitter.
3. *Serendipitous events*: From figure 1, we see differences in two dimensions: a) the volume of posts in blogs and the mainstream media is higher in serendipitous events than in planned events; and b) there is a lag between the event and the beginning of the information sharing about the event for all three media platforms.

4. *Planned events*: planned events exhibit different information practices than serendipitous events. Most of the Twitter activity happens in real-time, at the time of the event. In events planned by protesters, Twitter volume appears differently than in the news and blogosphere. Users in Twitter lose interest quickly (about 2 days after the event). In contrast, we see that the blogosphere and mainstream media regenerate a conversation about the event a few days after the event. Preliminary content analysis suggests that Twitter serves as a vehicle to transfer practical information about what is happening in near-real time.

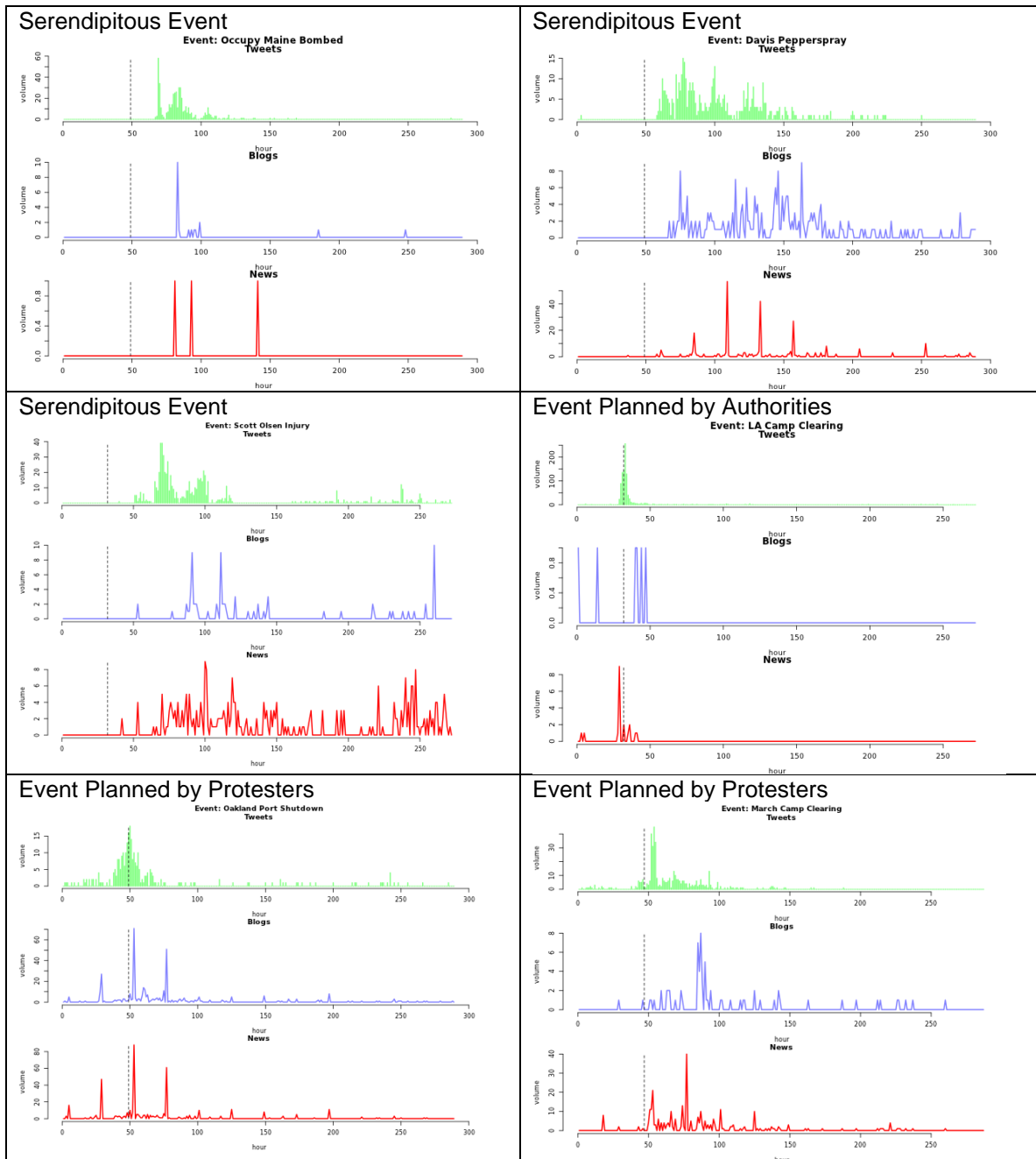


Figure 1. Frequencies of Information Sharing on Twitter

This preliminary content analysis of the sample Twitter data suggests other observations and distinctions that may be worth pursuing in later studies. For a planned event (e.g., clearing of the LA Occupy camp or the general strike/attempt to close the Port of Oakland), the anticipation of the event becomes part of the news cycle, regardless of the platform, with the expectations, results, and analysis shared in what might be a predictable cycle.

The stories of the unplanned (serendipitous) events, however (such as the injury to Scott Olsen from a tear gas canister, or the pepper spraying of the seated students at UC Davis), do not have the build-up of anticipation—they exhibit a sharp peak. The dropoff can be rapid (as in a normal news cycle), but the reactions to at least these two events maintain a higher level of interest. These two events become more than a news item that was soon forgotten. They became the focus for additional discussions and discourse on the different platforms; they became *memes*, serving as a kind of shorthand and boundary spanning event that engaged a wide range of participants. The engagement kept the original story alive in a different form, as, for example, when Megyn Kelly on Fox news observed that pepper spray is really just a vegetable product (2011), leading to discussions (often humorous) that perpetuated the discourse.

Discussion

The patterns in Figure 1 suggest that information distribution practices may be associated with the types of events and type of media platform. For example, the mainstream media discusses events planned by authorities well ahead of time. This may reflect relationships between authorities and media outlets where authorities call a press conference to indicate how they plan to deal with protesters. This gives them an opportunity to signal their intentions and frame the situation beforehand. Our preliminary analysis indicates that Tweeterers and bloggers note this signaling and framing; they feel excluded from what they see as a close relationship between authorities and the mainstream media. We also noted a higher volume of information about serendipitous events than for planned events. This could reflect our case selection, but it could also be evidence of interaction between social media and the mainstream media: if an event draws a great deal of attention in social media, it becomes newsworthy and news stories are generated. These news stories in turn gain attention from social media users, who then discuss not just the event, but the mainstream media's response to it. We find some evidence of this in our reading of tweets and plan to explore this more in future work. Finally, the question of lag in serendipitous events between the occurrence of the event and the beginning of the life cycle of the information flow can be attributed to the fact that users rely on gatekeepers. Once these gatekeepers (journalists or bloggers or Twitterers) post information about this event, then the public starts to share information.

Limitations

The work reported here is preliminary and we cannot draw general conclusions from our findings. However, the effort has provided us with the basis for improving our research approach and with the basis for focusing our research questions.

We find that when examining Twitter and other social media data, we must carefully define the scope of our search. Social media is extraordinarily rich; from the wide range of contributors to the universe of data available, researchers have considerable flexibility in conducting studies. The resulting dataset that we develop for our analyses is extremely sensitive to the search parameters. To achieve coverage we'd like to have in order to draw robust conclusions, we are likely to get a lot of noise in the form of irrelevant tweets or posts. On the other hand, narrowing the scope to achieve the *precision* (reducing the noise) means that we may miss critical posts or tweets.

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