

One-Sided Conversations: The 2012 Presidential Election on Twitter

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ABSTRACT

Technology has been promoted as a way to facilitate interactions across disparate groups of people. Political discourse has been historically constrained by geographic proximity of participants. The introduction of the Internet and specifically social media has altered these geographic constraints and political discourse is now one of the most prevalent activities in social media. As more individuals begin to use technology for political activity, understanding how the technology is used becomes increasingly important. Previous research exploring political discourse on social media has focused on one discrete event or a narrow time period. This narrow focus limits the understanding of the complex election environment. This study takes a longitudinal approach to examine the use of conversational syntactical features in Twitter derived from a 53 million Twitter message corpus collected during the 2012 Presidential Election (August 20, 2012 – November 13, 2012). This study identifies that, although candidates and media are the most talked about and talked to, these interactions elicit no response. The lack of response is counter to many of the perceived benefits of social media. These findings have implications for understanding how the public uses social media to engage with political candidates and the possibilities for how technology could be altered to better facilitate these interactions.

CCS Concepts

Information systems → Social networking sites

Keywords

Social Media, Politics, Technology, Twitter, Deliberative Discourse

1. INTRODUCTION

Previous research of political discourse on social networking sites has focused on one discrete event or a narrow time period such as the immediate run up to an election, one debate or a press conference [12; 40; 43; 49]. Technologically mediated political discourse begins with some kind of technological transport mechanism or platform. The printing press, broadcast media and newspapers are historical mechanisms for the support of discourse. With the advent of social media, the communication of ideas is more interactive and diffuse, both

geographically and topically. The different syntactical features of each technology constrain and enable political discourse, and for those reasons it is important to understand the menu of interaction types in the media [26; 30; 31].

Previous approaches to examining political discourse in social media are inadequate for examining both sides of the discourse if they exist (the citizens and candidates or the citizens and elected officials) and how this discourse reflects normal time periods without an event that draws increased interest from the public. As a result, previous research focuses only on political discourse in social media surrounding acute events without situating these analyses in the context of a larger event – an election.

The following study takes a longitudinal approach that focuses on more than just one event to understand how individuals used the conversational feature of the at-reply to engage with each other during both acute and non-acute events [3; 44]. The longitudinal approach used in this study is defined as taking place over the complete election period starting with the conventions and ending shortly after election day. All of the events that make up an electoral time period are treated as observations in the context of the time period.

The recent decade has brought about a number of theories of democratic engagement that have been established by examining technologically mediated activity in the context of one event. This narrow scope can lead to different findings than examining discourse longitudinally. Opinions and ideas can be shaped contextually as a result of one event and engagement during an event may differ from other times during a time period. This narrows the focus of the analysis, but also limits broader insights that could be gained from examining discourse occurring at the same time using different keywords or hashtags.

The findings described in this study illustrate that although candidates and media are the most talked about and talked to, these social media interactions elicit no response. Further, there are no repeated interactions among citizens using the election specific syntactical features. This finding illustrates that even though technologically facilitated interactions are possible, there is little adoption of these features for conversational interactions.

Although previous research examined how relationships on Twitter can establish network position and possibly influence others, I extend the research by looking at interactions and discourse behavior surrounding specific events. I do not focus my analysis on existing follower/followee relationships and instead focus on how syntactical features create and shape discourse surrounding an event or series of events.

2. RELATED WORK

Social media is unlike any technology used to facilitate interaction in the past. Previous research on technologically mediated communication has focused on synchronous activity in

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chat rooms, instant messages or comments and replies in discussion forums [13; 14; 27; 45]. Twitter's technological specific syntactical features and large user base provide a richness of discussion that gives users a greater ability to exchange information in distinctly different ways depending on the purpose of the exchange. This contrasts the technology of social media and Twitter specifically from earlier implementations of communication technologies. The archival nature and semi-synchronous ability to exchange information resembles both a chat room and a discussion board with millions of individuals posting approximately 350 million posts (tweets) a day.

2.1 Theoretical Frame

There is a long history of political science theories of democratic participation that help to further understanding the new technological environment. These theories were established throughout the 20th century as new technology was developed and adopted by the public. Although these theoretical frameworks are decades old, they are still applicable to the current technological environment.

2.2 Political Participation

In Lippmann's seminal work from over 85 years ago, *The Phantom Public* [28], he argues that the ideal of the public as being present in the political sphere is false. Lippmann argues that the public is a "phantom" and that democratic theory that argues that public opinion influences elected leaders has many flaws. Lippmann argues that the public is mostly absent in politics although they often participate in elections. In the context of political discourse, these events (elections in this case) may lead to greater excitement and different types of discourse than on a normal basis. Therefore, it is important to examine discourse longitudinally beyond just the time period surrounding the actual Election Day to develop a better sense of how the public feels and the type of information they are interested in.

John Dewey responded directly to Lippmann's argument in his book, *The Public and its Problems* [11]. One of the principal arguments made by Dewey is that the public is not absent nor a "phantom" as Lippmann argues, but instead lacks cohesion and is distracted by the technological and societal improvements of the day such as entertainment. The public's interest in non-civic activities detracts from their interest in politics. Dewey argues that technological improvements can lead to greater communication that may help the public (or multiple disconnected publics) find cohesion and a greater interest in politics. This greater interest can translate to more engagement and involvement in political activity that would bring the public out of its "phantom" state.

A more recent analysis of democratic theory comes from Jurgen Habermas and his concept of the bourgeois public sphere [20; 21; 23]. Habermas argues that transformations in history led to the ability for the public to engage in critical discourse that put into balance the power of societal leaders. The public sphere emerges from the congregation of individuals in publics that can form opinions representative of the individuals that comprise them. Habermas notes specific technologies starting with the 15th century printing press through newspapers, radio and television as the media of the public sphere in his earlier writings [22]. The nature of the public sphere as defined by Habermas may be changing, with the introduction of the Internet. Although Habermas identifies the public sphere as one entity, there are many issues that are discussed within the public sphere. These issues are of interest to many different individuals and as a result

of the narrow context of some of these topics, "issue entrepreneurs" emerge [2; 34].

Recently scholars have attempted to apply Habermas' concept of the public sphere to electronic communication [9; 41]. Dahlberg (2001) argues that in order for the public sphere as conceptualized by Habermas (1984) to be realized online and for online deliberations to facilitate rational-critical discourse, certain social and technical requirements must be met. These requirements include:

- "Exchange and critique of reasoned moral-practical validity claims"
- Reflexivity
- Ideal role taking
- Sincerity
- Discursive Inclusion and equality
- Autonomy from state and economic power

At the time of Dahlberg's initial research no public, virtual space that met these requirements existed. Political theorists supported Dahlberg's focus on the importance of enabling deliberative discourse through technology; for example, they established criteria for effective political deliberation and discourse that can now be achieved through social networking technology [15; 48].

Scholars such as Zizi Papacharissi have examined how social media and new technology affects political discourse. The "virtual sphere" as Papacharissi titles the Internet has great potential for facilitating discourse, but with this potential brings about the possibility of easier discursive fragmentation and the adaptation of the technology to the existing discursive environment [35]. Further, technologically mediated discourse and information brings about access issues that may disenfranchise and limit access by some.

Papacharissi (2004) has examined the Internet's ability to foster political discourse and provide a virtual public sphere [36]. She identified that conversations on newsgroups can be impolite yet still civil. When the conversations become uncivil they harm civic engagement attempts. Even with the possibility for the Internet to foster a virtual public sphere, Papacharissi further examines how more recent technologies contribute to the creation of a "private sphere" where one's activities in technology are focused on themselves even in the context of politics and civic involvement [37]. Twitter is one such technology as individuals are able to create their own environment.

Extending on Papacharissi's work, Freelon (2010) has proposed a framework to examine online political discourse that is grounded in traditional democratic theories [17]. Through an extensive review of both political literature and socio-technical literature, Freelon identifies "indicative metrics" of three of the most common types of democratic communication: liberal individualist, communitarian and deliberative. Freelon proposes that each of the three models of democratic discourse and their constituent metrics help to establish a framework with three models that can be applied to understanding specific types of discourse in a system. This bridging of two significant and important literatures helps to extend and allow for comparative analysis of discourse in socio-technical systems.

Technological systems that foster or expose individuals to discourse such as those studied by Papacharissi, Dahlberg and Freelon along with other scholars [16; 18; 19; 41; 50], bring about significant promise for the realization of democratic discourse online. Even though there has been progress in facilitating democratic discourse on the Internet and an interest from the public there is still technological development [46] that needs to occur.

2.3 Political Theory and the Socio-technical Environment

Socio-technical systems allow for the study of the criteria that Dahlberg established along with identifying the existence of other types of discourse and participation by the public in the political process as identified in Freelon’s (2010) framework. Although the access to the technology may help to facilitate more discourse, this discourse may not be constructive – though with new models that allow for systematic analysis of this type of discourse this type of activity can be more clearly analyzed.

The writings of Lippmann, Dewey and Habermas touch on three areas of democratic theory, but when applied to the context of the Internet and a specific technology such as Twitter, it is possible that the writings may be used as a theoretical framework to further an understanding of how multiple iterations of technological innovation since the early nineteenth century have all identified similar societal problems.

The Internet has played a role in every election since its introduction to the public in the 1990’s. This role has evolved with the technology, as campaigns have wanted to find an edge to allow them to further disseminate their message to a broader audience. As technology has allowed for more engagement, the use of the Internet has also evolved to where individuals are now able to get personalized updates from candidates and engage with them using Twitter.

2.4 Twitter syntactical features

Twitter has many syntactical features that allow for a richer social media experience. These syntactical features include: at-replies, retweets, URLs, at-mentions, hashtags and direct messages. Most of these features such as the hashtag emerged organically from the user base and have evolved through varied usage by different sets of users. Therefore, each syntactical feature has a unique and varied use that requires specific conceptualization in different contexts to properly research and compare the findings from different datasets. Table 1 illustrates the commonly used Twitter syntactical features with a description of each. The following paper will focus on the feature of the at-reply as it signals an attempt at conversational behavior.

Syntactical Feature	Common Syntax	Purpose
At-Reply	@[username] at first position of tweet text	To directly address another individual in a public manner.
At-Mention	@[username] at any point in tweet text	To highlight a tweet to another individual or to talk about someone. Mentioning them will inform them of the tweet.
Retweet	RT @[username] “tweet text”	To further disseminate another individuals tweet.
Links	http://[until whitespace]	To include external information in a tweet. Note: Twitter uses a URL shortener, but also accepts other URL shorteners as links too.

Hashtags	#[alphanumeric text]	To tag a message with a conversational marker or to add a tweet to an existing stream of discourse independent of a follower/followee network.
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Table 1: Syntactical Features Enumerated

2.5 Conversational activity on Twitter

An at-reply is the presence of an at-mention at the beginning of the tweet text. This syntactical feature allows users to direct a message towards another individual and to create a public conversation. Through network analysis of at-reply messages it is possible to identify conversational discourse. Honeycutt and Herring (2009) apply the construct of addressivity from earlier forms of computer-mediated communication [47] to the Twitter environment [24]. They identify the syntactical feature of “@”, which directs a message towards someone else, as a form of addressivity in Twitter. In their analysis, they found that close to 90% of the instances of @ were someone addressing another individual in a conversation and these conversations on average lasted 3-5 messages. Of the larger sample that included tweets with both @ and without, they found that those tweets with @ tended to be more interactive in their content since there was the initial intent of interaction as a result of the presence of @.

Honeycutt and Herring (2009) also found few instances (~3%) where another person was intended for a message, but there was no @ directing that message towards them. In these instances, the researchers searched for usernames to identify the intent of directing the message to someone else. This finding runs counter to other studies of large-scale computer mediated communication in other socio-technical environments where the utilization of @ is much more limited [33]. The researchers also found that those messages that were initially directed towards someone received a response 31% of the time. This is higher than previous studies of technologically mediated communication, but does not take into account the possibility that a reply may have been sent in another channel. This would make the total number of responses higher although they would not be reflected in the same data [53].

Analysis of the aftermath of the shooting of an abortion doctor in Kansas found that individuals with similar viewpoints were more likely to engage conversationally with each other in the context of a controversial event [51]. Even though individuals were more likely to engage with others with a similar viewpoint, about a third of the reply-pairs identified were between individuals with differing viewpoints. This engagement ranged from confrontation to defensive regarding the actions of the shooter and how pro-life individuals did not agree with his actions. Finally, in the context of information diffusion, it was discovered that individuals frequently retweeted news sources, but even though some individuals attempted to engage with these news organizations, few responded.

In a study that built on the earlier work by comparing the shooting with the collapse of a parking garage in Atlanta (both relatively local events, but one with a more controversial wider appeal) Yardi and boyd [52] found that the network of activity in Atlanta was denser than Wichita as a result of the politically divisive nature of the Wichita event. Further to the point, the more central Twitter users tended to be more geographically focused near the event, especially in the case of the parking garage collapse. This illustrates the difference between events of wide

appeal and local appeal and how conversational activity can identify the differences in these types of events. Geography does not play as significant of a role in national electoral discourse, but this type of finding may be important for Congressional and local elections.

Though relationships are important in understanding initial information diffusion, collecting and characterizing actual user behavior such as retweet behavior, the number of mentions and at-replies and the content of tweets are much better indicators of influence or conversational behavior [4]. This influence is also something that does not occur quickly and is often the result of extended interaction or reputation in the network [8]. To further examine at-reply networks Querica et al. (2012), used follower/followee networks in combination with one-way and two-way reply networks to support earlier research that at-replies signify stronger relationship ties [25; 39]. Further analysis of public discourse that uses the at-reply is important in understanding a shift in how individuals are publicly communicating about numerous topics.

3. RESEARCH QUESTIONS

The following research questions are used to ground the analysis of at-reply usage during the 2012 Presidential Election.

1. How does the political discourse that occurs in Twitter using the syntactical features of the at-reply during the 2012 Presidential Election identify an emerging participatory public engaged in conversational discourse?
2. To what extent does repeated conversation occur as operationalized by the presence of the at-reply in Twitter?

4. DATASET DESCRIPTION

The data collection for this study was done using a modified version of the TwitterZombie infrastructure [5; 30]. In total, there were 52,487,179 unique tweets that were captured using the combination of 68 queries (47 hashtags, 15 handles, 6 keyword searches) related to the 2012 Presidential Election. Of these unique tweets that were collected, there were 28,019,513 tweets that contained unique text. This disparity exists because a tweet that is retweeted 100 times exists 100 times in the dataset, as each retweet is its own unique tweet in the eyes of Twitter, but from an analysis perspective the actual text is not unique. Therefore, the comparison of unique tweet count to overall tweet count highlights that only 53.3% of the total tweets contained original text.

In previous research, descriptive statistics about a Twitter dataset may be biased as a result of the collection criteria. For example, a dataset collected using one hashtag and one handle would have a significant amount of hashtags and handles, but may lack any instances of an individual not using a hashtag or using an individual's last name as opposed to their Twitter handle. As a result of the selection criteria, the dataset would be biased to containing a specific type of activity.

As described in the previous section, this study attempted to avoid this type of bias by using more than just hashtags and at-mentions as selection criteria. This broadens the type of data that were collected. This approach has not been identified in any other study of Twitter as other studies have traditionally relied on a set of hashtags or handles to build a dataset.

Table 2 details the raw counts of some of the syntactical features in the dataset. There were over 48 million hashtags used, but only 1 million were unique. A similar disparity exists between the total number of at-mentions and the number of unique at-

mentions. Similarly, the number of unique base URLs is less than the total number of URLs collected, since many of the base URLs were used repeatedly¹.

Unique Tweets	Total Hashtags	Unique Hashtags
28,019,513	48,083,288	1,044,858
Total At-mentions	Unique At-mentions	Unique Base URLs
55,033,314	2,617,100	118,907

Table 2: Raw Count of Syntactical Features

Examining the overall presence of certain syntactical features in the complete dataset illustrates a corpus with a diverse set of characteristics. Table 3 provides an overview of the percentage of tweets that contained certain syntactical features. We see that nearly one-third of all tweets contained a URL and just over one-half contained a hashtag. Nearly three-quarters of all of the tweets contained an at-mention and this includes the nearly nine percent that were constructed as an at-reply and the 55% that were a retweet. The percentage of at-replies, at-mentions and retweets are similar to previous analyses of election data on Twitter, but the percentage of tweets with URLs and hashtags is lower in this dataset [32]. The reasons for these differences may be the addition of more keyword queries in this dataset construction and also the increased times of acute "bursty" activity where the percentage of URLs is found to be less.

URL %	Hashtag %	At-Mention %	At-reply %	Retweet %
32.59%	50.15%	72.81%	8.78%	55.10%

Table 3: Syntactical Feature Presence in the Complete Dataset

5. METHODS

Analysis for this paper was conducted using a subset of the collected dataset. This subset was created by identifying the at-mentions that appeared in the first position of a tweet and then generating an edgelist where the author of the tweet was the head and the user that was mentioned in the tweet was the tail [6; 7; 24; 25; 42]. For example, the following tweet "@BarackObama, thank you for all you have done #teamobama2012" authored by "@maizeandblue" would create a directed edge: maizeandblue → barackobama. This would be one line in an edgelist that comprised all at-reply activity.

The edgelist created through this parsing of the data was used as the foundation of the analysis. The in-degree versus out-degree measures for each individual in the network were analyzed to identify individuals who had high in-degree and high out-degree. An individual who initiated a high number of conversations would be classified as having high out-degree and an individual who was the recipient of a high number of at-replies would have high in-degree.

¹ A base URL is the domain of the URL without any of the specific directories. For example, the URL www.cnn.com/USA/news/Story, would have a unique base URL of www.cnn.com.

In an effort to understand highly occurring “conversations” the directed edges constructed for the at-reply network analysis were aggregated into pairs. Therefore, if user @JoeBiden directed 1,000 at-replies towards @BarackObama, the at-reply dataset would have a line that included @JoeBiden | @BarackObama | 1,000. This aggregation allowed for an understanding of the most frequently occurring activity at the conversational pair unit of analysis. This would identify the presence of repeated interaction. The 725 most frequently occurring pairs (representing pairs that occurred more than 100 times) were then examined to identify the most frequently occurring conversations. This approach allowed for a better understanding of repeated interactions and who the recipient of these repeated interactions were.

6. FINDINGS

There was limited adoption of the at-reply suggesting limited conversational behavior. In total, there were 4,606,922 conversational pairs (8.78% of all tweets) of which 3,071,676 pairs in the dataset were unique. 93.2% of the individuals that used the at-reply used it five times or less and 67.4% used it only once. There were 1,547,474 unique source handles and 719,772 unique target handles. This illustrates that there is a small set of individuals who are provoking conversation with others who never respond.

The most frequent conversation initiators (those with high out-degree in the at-reply network) were individuals not tied to an organization or campaign. The most frequent conversation recipients (those with high in-degree in the at-reply network) were those directly tied to the campaign. None of the campaign related accounts replied to an at-reply message.

There are differences in the number of at-replies that individuals used depending on whether they sent and received an at-reply. Of the 719,772 individuals that received an at-reply, 265,359 also initiated a conversation (36.7%). These 265,359 individuals represent a subset of those that were active on both sides of conversational activity. As identified earlier, 1,547,474 individuals initiated a conversation in the complete dataset. This means that only 17.1% of individuals who started a conversation also received a message. Analysis of this subset of individuals on both sides of the conversation allows for a better understanding of both sides of engagement

6.1 Temporal Analysis of At-Reply Use

Temporal analysis of at-reply use illustrates event triggers that lead to increased use of the conversational features of Twitter. The percentage of tweets with an at-reply on a daily basis varied from 6.00% on November 7, 2013, the day after the election to 15.30% on November 11, 2013, five days after the election (Figure 1). It is notable that the day of the election (November 6) is the second lowest day for conversational behavior, whereas the second highest day in conversational behavior is August 24th. This is a noteworthy news day as there was a shooting at the Empire State building, which sparked discourse related to gun control. Gun control is traditionally a controversial topic that leads to increased activity in the news and this is reflected in the data. This is also in the run up to the first convention of the election season and a short time after Paul Ryan was announced as the VP candidate, which also may have led to an increase in at-reply activity.

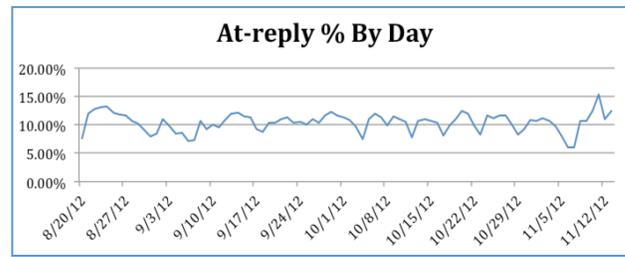


Figure 1: At-reply Percentages By Day

There are also distinct patterns of conversational activity that relate to acute events. The data suggest that the acute events led to less conversational behavior and more broadcast commenting on the activity. There are distinct dips in at-reply activity during the two party conventions, the four debates and on Election Day.

These drops are likely the result of the high volume of activity on those days. Given the significant number of messages on each of the days of the acute events, the ability to read a message and respond to it using an at-reply is lower. Although there are some dips during acute events, there are distinct patterns of bursty activity immediately before and immediately following the debate, which suggests that acute events may generate conversational activity immediately before and after the event.

6.2 Examining Both Sides of the Conversation

The most frequent initiators of conversation were individuals with no campaign or media affiliation and the most frequent recipients of these at-replies were candidates and the media. The concentration of activity of those who initiated conversation (out-degree) was more diffuse. The most frequent conversation initiator was an account that tweeted random messages often in Japanese directed towards @BarackObama. This individual had over 186,000 tweets as of May 2013 and based on the profile and frequency of activity (every minute for 24 hours a day) it is likely that the account is an automated bot.

The most notable characteristic about this account is that it was responsible for two and a half times the amount of at-replies initiated than the second most prolific at-reply initiator. The second most frequently occurring account also appears to be a bot. This account also has more tweets than the third most frequently occurring account. This illustrates that outliers in this data are automated Twitter bots that are programmed to tweet at specified intervals. The next accounts that were high in at-reply out-degree were prolific Twitter users, but analysis of their profiles and other tweets suggests that they were real individuals and not bots.

Those that received at-replies were much more concentrated. The two Presidential candidates had the highest in-degree in the at-reply network. In total, the four candidates received 37.6% of the total at-replies (Table 4). Barack Obama and Mitt Romney were significant outliers in the context of the at-reply activity. This concentration illustrates the prominence of these accounts in the political discourse. The candidates were not only tweeting a significant amount, but were objects of the media and as a result many individuals used Twitter as a way to attempt to interact with them.

Handle	In-degree
barackobama	1,054,197
mittromney	544,362

michelleobama	94,692
paulryanvp	80,588
joebiden	55,850
realdonaldtrump	41,098
obama2012	33,081
anndromney	22,689
whitehouse	21,419
edshow	19,812

Table 4: At-reply in-degree

In the context of the election, those high in at-reply in-degree could be broken into two categories, campaign related accounts and provocateurs. The account associated with the Obama campaign (@obama2012) and the official White House account (@whitehouse) were also common recipients of at-reply's illustrating the prominence of campaign related accounts beyond those of just the candidates. Media accounts also had high in-degree in the at-reply network with MSNBC commentator Ed Schultz (@edshow) having the tenth highest in-degree and media personality Donald Trump (@realdonaldtrump) being the sixth highest in at-reply in-degree.

6.3 Reciprocated Conversation?

Citizens used the at-reply syntactical feature to direct messages towards campaign and media accounts, but this engagement was not reciprocated. Campaign and media accounts comprise the majority of accounts that were the most targeted of the at-reply with over 42% of the at-reply messages being directed towards the most salient campaign and media accounts (Table 5). The top 87 accounts were coded to identify the types of accounts that were the recipient of messages². This statistic correlates to the high number of at-mentions of these accounts illustrating that citizens use Twitter to talk about and talk to public figures.

Code	Frequency	Percentage	Percentage of These Codes	Percentage of Overall Tweets
Campaign	25	28.74%	92.09%	40.38%
Celebrity	12	13.79%	2.27%	1.00%
Individual	1	1.15%	0.06%	0.03%
Interest	2	2.30%	0.19%	0.08%
Media	44	50.57%	5.08%	2.23%
Parody	1	1.15%	0.12%	0.05%
Political	1	1.15%	0.08%	0.04%
Unknown	1	1.15%	0.11%	0.05%

Table 5: Types of Individuals Who Received At-replies

Over 75% of the coded accounts were campaign or media related and the next highest percentage of coded accounts were those related to celebrities. These celebrities were those involved in some form of campaign activity such as promoting

² The top 87 individuals represent 43.8 percent of the total conversation pair data and 69 percent of the targets that were not included in the source info. This accounts for every account that was a target of an at-reply more than 1,000 times and yet did not respond.

one of the candidates on Twitter or headlining a campaign rally. The six accounts that were not associated with the campaign, media or a celebrity were a mix of individuals and parody accounts.

The number of at-mentions received by the campaign related accounts was 92%. In the context of the complete dataset, these coded campaign related accounts accounted for over 40% of the total number of tweets in the complete dataset. This illustrates the dominance of these accounts in the at-reply data. Media accounts were the second most frequent recipient of at-replies with just over 5% of the tweets in the dataset of the top 87 accounts and just over 2% in the complete dataset.

None of the campaign related accounts responded to an at-reply. This analysis was conducted through both analysis of the collected data and also by examining the timelines of the candidates to ensure nothing was missed in collection. This lack of response illustrates that the at-reply was used for a one-way conversation where individuals would direct tweets towards candidates or campaigns about policy issues or other activity and would also direct messages towards media personalities to voice their opinion on certain activity. The lack of response from candidates and a limited response from media personalities situates the at-reply as a way for candidates and media personalities to give the perception that they were interacting when they were only using it as a way to receive information.

6.4 Analysis of Conversational Pairs

Expanding the analysis beyond the individual account unit of analysis helps to highlight the frequently occurring "conversational pairs." A conversational pair is the combination of a source and target handle. There were 490,563 conversation pairs that appeared multiple times with 2,581,113 conversation pairs appearing only once. This accounts for 84% of all of the conversational pairs collected indicating a significant number of "conversations" only occurred once. This suggests limited repeated interaction. The most active "conversations" were one-sided and directed towards the candidates and media.

In total, there were 725 total pairs of conversation (of 3,071,676 total) that occurred more than 100 times (Table 6). The accounts that were the targets of these conversations (in-degree) were coded to identify the most frequently occurring activity at the conversational pair unit of analysis. This differs from the individual unit of analysis since these pairs represent discrete pairs of activity and illustrate repeated directed interaction from one handle to another.

Table 6: Top recipients in Conversational Pairs

Handle	Frequency
barackobama	361
mittromney	159
paulryanvp	13
whitehouse	11
cspanwj	7
joebiden	7
obama2012	6
realdonaldtrump	6
edshow	5

The accounts reflected in Table 6 illustrates that the most frequent use of the at-reply is directed at individuals who played highly visible roles in the election. The candidates and press are the most visible figures in an election and as a result were the frequent recipients of a significant amount of activity. The top three recipients of the at-reply are the candidates and the fourth is the official White House Account. The fifth most frequently occurring account is the C-Span Washington Journal account, which occurs highly as a result of promoting the Twitter handle on its daily television program. Following these accounts we see Vice President Biden, the Obama campaign followed by two celebrities (Donald Trump and Katy Perry) and progressive television personality Ed Schultz³.

7. DISCUSSION

Twitter provides a technological platform that reduces geographic constraints and allows citizens to seek out and engage with others. It also allows candidates to engage with citizens directly. Compared to other social media technologies such as Facebook, Twitter allows unidirectional relationships to be created with relative ease and provides more native syntactical features (hashtags, at-mentions, at-replies, shortened URLs, and retweets) that facilitate different forms of communication.

This paper illustrates that even with the availability of the numerous technological and syntactical features in Twitter that help to facilitate interactions, there is still a limited realization of the promise that the technology affords. Twitter amplifies the existing political environment where communication is one-way and discourse is disconnected.

During the studied time period, Twitter attempted to provide a centralized place for users to consume information by aggregating tweets during acute events that contained specific hashtags (#debates, #electionday, #gop2012, #dnc2012). The sheer amount of activity related to these events resulted in tweets getting lost in the noise. Even with the technological ability to filter activity based on the numerous syntactical features such as hashtags, Twitter was unable to aid users in digesting the significant amount of activity that occurred within the environment. This set of findings suggests that more content (in this case tweets) in an open forum is not necessarily better. In order to better facilitate political discourse in a constructive and digestible manner, technological platforms may need to focus on better ways to enable users to filter activity to engage in discourse.

7.1 Theoretical Implications

As Putnam [38] argued in his seminal book, *Bowling Alone*, social capital in the United States has declined. His research points to a decline in voter turnout along with a decrease in civic participation as the reason for the decline in social capital. Putnam blames technology for some of this decline as he claims that individuals are more interested in television and other entertainment activities instead of civic activity.

Dewey once argued that the public lacks cohesion and is distracted by the societal improvements of entertainment that were occurring in the time period preceding the Great Depression when

it comes to discussing politics [11]. Dewey argued that this distraction could be fixed with technology. These technological improvements would facilitate the connection of multiple disconnected publics and would lead to cohesion between previously disconnected groups and as a result would create a renewed interest in politics.

Twitter is one such technology that has the ability to help address this lack of cohesion and interest in politics as it affords individuals the ability to find others and engage with them using hashtags. The significant amount of activity noted during the studied time period illustrates an interest in politics, but the limited amount of repeated interactions that were identified in the at-reply data illustrate that there are still a number of disconnected groups and individuals. The data reflect that Twitter is being used to contribute to the larger discourse, but that this discursive behavior is not occurring between individuals, but instead is primarily individuals voicing their opinions or ideas to a public forum.

Therefore, even with the introduction of technology to bring together large groups of individuals in an open forum, the public is still phantom [28] in many ways, as they only use the technology to comment in a large public forum. Instead of actually allowing the public to engage, the introduction of an open technology such as Twitter may be an even greater distraction as there is so much going on and the technology is still limited in the way that individuals can filter the activity. This limited filtering along with the ability of anyone to introduce a hashtag may harm cohesion, as the number of hashtags is relatively unlimited. The asymmetry of Twitter's friend relationships also limits this cohesion because of the ease of exposure to numerous individuals and the context collapse that occurs with what individuals are saying [29]. The ease of technology ends up being its greatest downfall in facilitating activity beyond commenting.

7.2 The Internet's effect on political processes

There is evidence to suggest that the Internet is continuing to facilitate the amplification model of politics [1]. Agre's amplification model states that the Internet amplifies existing political processes as opposed to the Internet addressing a fundamental shortcoming in the process and leading to change (reinforcement model).

This study provides evidence that suggests that the 2012 Presidential Election on Twitter fits the amplification model. The following paper demonstrates that the broader participation by individuals does not seem to be organized even with syntactical features that make the identification of other interested individuals easier. In the case of the analysis of the at-reply, individuals used it to talk to and about candidates and the media as opposed to engaging with each other.

The Internet overcomes limitations of the physical world by allowing millions of citizens to "talk" to each other. This facilitation comes with the difficulty of people being able to manage the multitude of interaction possibilities with the others that are co-present in the technology. The previous findings illustrate that most conversations were one-sided and that at-replies were mostly directed towards candidates and the press. Additionally, individuals who received at-replies were more likely to initiate a conversation. These findings suggest that engagement from others brought on engagement from a specific person. In this case, technology is helpful by breaking down barriers between individuals allowing for more engagement, but these barriers may have existed not from a lack technology, but a fundamental lack of individuals being able to manage interactions with more than a defined number of people.

³ Donald Trump and Katy Perry are frequent recipients of the at-reply since these individuals played a role in the latter part of the campaign. Katy Perry wore a dress with "Forward" on it at one of President Obama's final campaign rally's, which resulted in a significant number of tweets about her. Donald Trump was vocally opposed to Obama and as a result was vocal on Twitter.

As Davis [10] argued more than 15 years ago, the Internet is “destined to become dominated by the same actors in American politics who currently utilize other mediums.” In this study, those who were most discussed in the data were the candidates and media as they were the subject of the at-replies. This is a similar finding that would exist in traditional media sources as newspapers and television news channels talk about what is newsworthy and those topics are the candidates and the issues. This provides further evidence that the amplification model is characteristic of this activity.

7.3 Deliberative discourse not realized

The lack of at-replies in the corpus illustrates that Freelon’s notion of deliberative democratic discourse [18] is not realized. There is some evidence of deliberative behavior since there is a public issue focus, equality, and discussion topic focus, but there is limited repeated interaction among individuals. As a result of this limited interaction there is a lack of questioning and reciprocity, both aspects of deliberative behavior.

There is no evidence that a significant number of conversations occurred in the public between individuals as most of the at-reply activity was directed towards candidates and media. This does not mean that conversations did not occur online; it only suggests that Twitter was not the chosen venue for these interactions. The most common “conversation pairs” were those that were one individual directing at-replies towards a candidate. Although the technology was there to facilitate this activity, and individuals had the ability to engage with each other, there was limited adoption. This would suggest that the most apparent model of democratic communication that is represented within this dataset is somewhere between liberal individualist and communitarian with some limited attributes of the deliberative nature [17].

Twitter is not facilitating traditional conversation en masse. Individuals may feel as though they are conversing in a large group, but not to one person. This is a combination of the public and private sphere. Individuals use the technology to reach out to public figures that they have no other access to. In the case of media personalities, many encourage this reaching out, but yet they do not respond. This lack of conversation is something that individuals may not mind, but it could also lead to a feeling of not being heard and may have negative implications in future election cycles. It is possible that technological discourse will evolve in future elections to become more deliberative, but the ideal of deliberative communication may not be achieved given the large scale of Twitter even with the existence of syntactical and technological features to facilitate these types of communication.

7.4 Socio-technical Implications

The percentage of at-replies was higher than other studies representing a higher adoption of the syntactical feature, albeit for something not necessarily conversational in nature as evidenced by the lack of back and forth activity [24]. As most research on Twitter uses the hashtag for creation of datasets, the percentage of tweets with a hashtag is not comparable (since a dataset with a hashtag as the selection criteria means 100% of tweets will have a hashtag).

Citizens now have the ability for the candidates to deliver information directly to their web browsers or mobile phones. This type of information acquisition allows for individuals to do more research on candidates and share information with other citizens that may be interested. In this study, the public used the syntactical features to reach out to the candidates and the media with no response. The concentration of at-replies targeted towards public figures suggests that individuals

wanted to reach out to these figures to engage in a dialogue or to feel as though they are being heard.

In the case of the 2012 election, the technology for interaction exists between the citizenry and public figures, but it has not been fully utilized. Candidates use it to disseminate information to the citizens and when a response is garnered they do not continue the interaction. In addition to the limited interaction between candidates and citizens, there was also a lack of repeated interaction among the citizens. Therefore, the technology is still only being used for one-way communication. Given the scale of the electorate, a continued interaction between all of the individuals who reached out directly to the candidates may have been difficult given the scale, but it would have been possible to attempt to carry on some interaction.

Further, it is possible that similar to how physical political activity requires a set of civic skills [2; 36; 37] that political engagement and activity on the Internet may require a specific set of civic skills. The combination of technology skills coupled with political prowess helped President Obama build a grassroots movement in 2008 to win as a relatively unknown first term Senator. These types of skills need to be promoted among the citizenry. The belief that citizens may be able to translate physical civic skills into virtual civic skills is lacking since the environment is different and is not geographically bound. It is possible that with the aging of the millennial generation that these skills will continue evolve and political engagement on the Internet will continue to get stronger.

8. ACKNOWLEDGEMENTS

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