Technologically Mediated Political Discourse During a Nationally Televised GOP Primary Debate

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Abstract:

Social media creates a geographically independent commons that transforms citizen participation in political discourse. In our study, we examine 185,420 publically available Twitter messages (hashtags #CNNDebate and #gopdebate) during a Republican Primary Debate in November 2011, hosted by CNN and viewed by over 3.5 million individuals in the United States. Through analysis of how individuals use the syntactical features of Twitter such as at-mentions, at-reply's and URLs we identify how activity differs at different phases of a televised debate and who the subjects of this discourse are. Understanding how individuals engage with each other in an open forum has broad implications for understanding social media's effect on civic engagement and information diffusion among elected officials, candidates and citizens. Our findings suggest that a significant number of the syntactical features specific to Twitter are utilized to relay information, engage in discourse and create new threads of discourse related to issues that are brought up during the debate. Although syntactical features signaling conversation are used, actual engagement is limited.

Introduction

As more individuals use technology to acquire political information and participate in the political process, understanding the technological features that enable discourse and the networks of discourse that result from this activity becomes increasingly important (Lazer, 2011). Political discourse in the physical world was historically constrained by the geographic proximity of participants — people talk about political and social issues with others whom they already know and who are geographically close (Bearman & Parigi, 2004; Huckfeldt & Sprague, 1987). Newer technologies, such as social networking sites (SNS), facilitate discourse independent of geography and pre-existing relationships.   In this new medium, citizens form ties with individuals they already know, but are also able to engage with a diffuse, growing and geographically diverse groups of people around events and topics of interest.

Political discourse is one of the most common forms of activity on social networking sites. In the 2010 United States Election, 73% of individuals used a social networking site, specifically Facebook or Twitter, to obtain political information, including news about candidates, information about political events and candidate policy stances (Rainie, 2011). Social networking sites (SNS) are also influencing relationships surrounding political matters. In a 2012 Pew study, 10% of users say they have blocked, un-friended or hidden another individual's comment as a result of the political content (Rainie & Smith, 2012). Similarly, 47% of users of SNS have hit the "like" button while 38% have responded with a positive comment to another individual's political comments on a SNS (Rainie & Smith, 2012).

One of the recent developments in technologically mediated political discourse is the use of social media as a back channel where discourse about real time political events occurs. Electoral debates provide a contextually focused laboratory for the examination of such

discourse in the current political environment as they are widely covered by news organizations and discussed in social media. Previous research on technologically mediated interactions around political debates highlights how individuals have been able to submit questions for participants of a debate as opposed to being able to engage with each other in the context of the debate (Ricke, 2010). Examining real-time civil discourse related to debates on a larger scale emerges as a possibility due to the adoption of Twitter.

Previous methodological approaches to political debate research in the United States do not correlate the effects of specific statements or content during the debate with shifts in attitudes (Fridkin, Kenney, Gershon, & Woodall, 2008; Lanoue & Schrott, 1989b). Most previous studies of political debates rely on non-representative, geographically bounded samples that examine only the time period of the debate as opposed to the activity before and after the event (Zhu, Milavsky, & Biswas, 1994). The lack of consistent analysis methods across studies limits broader insight. Using Twitter as a laboratory for examining discourse during a televised debate eliminates prior geographic sampling limitations and allows for analysis to occur at a more granular level.

The existing body of research examining Twitter as a tool for civil discourse around political debates in the United States focuses on event identification and topical analysis (Diakopoulos & Shamma, 2010; Shamma, Kennedy, & Churchill, 2009; Shamma, Kennedy, & Churchill, 2010b; Shamma, Kennedy, & Churchill, 2010b). These findings from previous studies on technologically mediated debate discourse are more broadly situated in the discourse surrounding event identification and back channel communication related to live TV instead of the relationship between information technology and politics (Doughty, Rowland, & Lawson,

2011; Lanagan & Smeaton, 2011). We build on this work by examining how citizens and politicians engage with each other and how this changes based on the time of the activity.

Of the select studies that have been published related to political discourse and debates on Twitter, there are only two that examine primary election debates. Prior work on primary debates is limited mostly due to the timing of Presidential elections and Twitter's popularity. Hu et al. (2012) examined Twitter in the context of a primary debate by attempting to identify the types of topics and events that were ongoing and whether the discourse at that time was related to what was happening on TV (Hu, John, Seligmann, & Wang, 2012). The other study was conducted in part by the two authors of the paper, as part of a larger effort to validate Twitter collection methodologies. This study examined communities of discourse related to the 2012 South Carolina GOP Primary Debate and how different hashtags were used by different groups of individuals (Black, Mascaro, Gallagher, & Goggins, 2012). This study found that hashtags were adopted differently depending on the device used and the intent of the discourse.

We build on earlier work in this study by presenting an analysis of Twitter activity related to a political debate in the United States. Through analysis of the data tweeted using #cnndebate and #gopdebate related to a November 2011 Republican primary debate, it is possible to identify how Twitter's syntactical features are used by citizens to engage differently depending on the time relative to the debate. Our analysis demonstrates how citizens use Twitter to engage with others while viewing the debate and how citizens use the medium to highlight information related to debate participants and moderators through technologically appropriated means such as hashtags, at-mentions and at-replys.

We expect that the slicing of the data into three pieces (pre-debate, debate, post-debate) would allow us to identify differences in user behavior relative to debate activity. Our findings

suggest that there are distinctly different uses of the syntactical features in Twitter depending on the time period (before, during and after the debate). These findings have implications for future debate research and understanding how individuals utilize Twitter as both a back channel for communication and a context for political discourse[1].

Literature Review

Political Debates

Civic debate has been one of the foundations of government throughout history. Electoral debates in the United States have evolved significantly over time and allow citizens to learn about candidates. This ability to learn more about the candidates leads to more informed decisions, although they do not change the minds of individuals that have strong partisan allegiance (Jamieson & Birdsell, 1988). Modern Presidential debates are often compared to sports and entertainment events (Blankenship & Kang, 1991) and with the advent of 24-hour news coverage this continues to evolve.

Debates provide citizens with the ability to judge candidates based on answers to a similar set of questions simultaneously and as a result may strongly influence independent voters. Debates also help to develop interest from individuals in a particular election and educate citizens about issues, even if they do not watch the debate for that purpose (Wald & Lupfer, 1978). Those who are not interested in politics do not watch debates as much as those who are interested (Kenski and Stroud, 2005), but when the uninterested watch the debate they tend to learn as much as those who are interested (McLeod, Bybee, & Durall, 1979). This illustrates the

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[1] We will make this data available for sharing upon acceptance of this article.

ability for the debate to influence and educate viewers even when they did not initially intend on it.

Primary debates may be the most influential debates during an election cycle since they expose individuals to candidates from the same party who likely have similar policy positions (Benoit, McKinney, & Stephenson, 2002). These intraparty debates often occur early in the campaign and therefore provide a different context than many of the more popular and widely viewed debates as they cover a larger number of issues (Benoit & Hansen, 2004; Pfau, 1987).

The 24-hour TV news cycle means that coverage of debates is increasing, leading to a greater influence of the debates on voter perceptions. Fridkin et al. (2008) found that during one of the 2004 General Election debates, media spin related to the debate significantly affected the attitudes of the public (Fridkin et al., 2008); leading to a call for researchers to examine public opinion as close to real-time as possible, limiting the influence of subsequent "media spin". This echoes outcomes of earlier research that identifies content analysis of specific statements by the candidates as being important for examining public reactions to their activity (Lanoue & Schrott, 1989a).

The Modern Presidential Debate

Although modern Presidential debates are widely studied, the methodological approaches used are widely questioned. Zhu et al. (1994) provide a comprehensive review of the literature and identify several issues in the design and methodological approach to the research (Zhu et al., 1994). First, most of the debate research until 1994 focused on two election cycles — 1960 and 1976. As a result of this limited scope of analysis, the effects of television and newer technologies were not studied. Second, most of the studies were drawn from geographically specific adult or student populations, limiting the generalizability of the findings. Third, most of

the research is focused on the general election and not the primary election debates that have been illustrated to have a different effect and purpose.

Methodologically, Zhu et al., (1994) find numerous issues with previous debate research. Most of the studies that Zhu et al. (1994) review use surveys to collect data and do not control for exposure to other information. Also, previous debate research has used a variety of pre-test/post-test and just post-test methods that have given results that may be influenced by information that comes from places other than the debate. One of the most significant weaknesses that Zhu et al. identified was that the methods used did not afford the ability for the researchers to correlate the debate content with audience responses during specific times. Using this review of the literature as a basis, Zhu et al. examined the first 1992 Presidential debate and identified that the debate had a sizable effect on issue knowledge, but no effect on candidate image perception.

Building on previous work, Cho & Ha (2012) used a two-wave panel methodology to examine the 2004 Presidential debates. The researchers found that debates reinforce partisan positions of citizens. This reinforcement occurs through conversations that occur as a result of the issues that are discussed during the debates. Although these researchers identified an increase in conversation as a result of debates, the content and structure of the conversations were not examined due to the fact that the conversations occurred outside of technologically mediated environments that would have allowed for the analysis.

Recently, The 2012 Presidential campaign debates were studied. A three-wave panel analysis (before the debate, after the debate and after the election to get a broader perspective on issue evolution) of undergraduate students found that watching a debate lead to a decrease in

political cynicism and an increase in political information efficacy (McKinney et al., 2013). This increase may have lead to an increase in voting.

One of the variables that the researchers examined was whether the individuals in the study tweeted while watching the debate. The research found that the political information efficacy of those who live tweeted the debate was greater than those who did not, but there was no difference in the political cynicism of the two groups. This suggests that those who live-tweet debates may be more politically oriented and knowledgeable than those that do not. Although this difference was noted, the researchers note the limited generalizability of these findings given the small sample and narrow scope of the study.

We use previous debate research to ground our examination of technologically mediated discourse in Twitter. Conversation has been identified as increasing as a result of debates yet has not been analyzed due to the nature of the activity, occurring in the physical world. Unlike previous research, the dataset collected for this research allows for an analysis of the structure of the activity identified as conversational in the technology.

The next section details numerous methodological approaches to examining Twitter activity, but there is limited analysis in the literature of primary debates in technologically mediated environments. Twitter overcomes the limitations of pre and post-test methods, identified by Zhu et al (1994) as it allows for collection of the complete discursive environment. This allows for a diverse sample of individuals to be studied in aggregate, as there are no geographic boundaries and collection can occur longitudinally.

Social Media and the Transition from Public to Private Sphere

Understanding technologically mediated political discourse is difficult with the rapidly evolving and ever changing atmosphere. In the context of political discourse, elections may lead

to greater excitement and different types of discourse compared to regular events since there is more excitement. Debates are one subset of political discourse in an election. As a result of the difference in political discourse during an election it is imperative to examine how the public engages around these types of events.

The public has been previously identified as absent in most political discourse (Lippmann, 1925). The public's absence may not be the result of a lack of interest, but instead the result of limited cohesion in the disconnected political society and distractions that are the result of technology (Dewey, 1927). This lack of cohesion creates a set of disconnected publics that lack a forum to engage with each other given geographical and ideological distance. Although traditional media such as newspapers, television and radio may help to broadcast information, these technologies do little to provide a place for the public to engage around public matters

Habermas (Habermas, 1984; Habermas, 1991; Habermas, 1989) argues that technological transformations in history led to the ability for the public to engage in critical discourse that put into balance the power of societal leaders. His arguments were made in the context of historical technology, but recently scholars have attempted to apply Habermas' concept of the public sphere to electronic communication (Dahlberg, 2001; Robertson, Vatrapu, & Medina, 2010). Dahlberg (2001) argues that in order for the public sphere as conceptualized by Habermas (1984) to be realized online, 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 support 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 (Fishkin, 1997; White, 1989).

Scholars such as Zizi Papacharissi have examined how social media and new technology affects political discourse. The "virtual sphere" as Papacharissi refers to aspects of the Internet is argued to have great potential for facilitating discourse, but with this potential brings about the possibility of easier fragmentation of discourse and the adaptation of the technology to the existing discourse environment (Papacharissi, 2002). In Papacharissi's work, conversations that occurred in a set of political newsgroups were identified as being contentious yet still civil (Papacharissi, 2004). When these conversations became uncivil, civic discourse was harmed and became unproductive as these attacks were seen as negative.

Technological systems that foster or expose individuals to discourse such as those studied by Papacharissi and Dahlberg along with other scholars (Foot & Schneider, 2002; Freelon, 2010; Gonzalez-Bailon, Kaltenbrunner, & Banchs, 2010; Robertson et al., 2010; Wojcieszak & Mutz, 2009) bring about significant promise for the realization of democratic discourse online. Even though there has been significant progress in facilitating democratic discourse on the Internet and a significant interest from the public there is still significant technological development that needs to occur (Walton, 2007).

Twitter facilitates many aspects of the public sphere with the openness of the technology

and the syntactical features that are included in each of the technologies. 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. 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 activity can be more clearly analyzed. The promotion of a hashtag by event sponsors and the media helps individuals to "congregate" in one area and helps to break down the disconnected and geographic disparate activity and creates a virtual public sphere for interactions.

Political Events and Twitter

Analysis of political discourse on Twitter has focused on issues, candidate debates and elections. Each context differs in both the type of data and the implications of the findings. A study on the 2010 Australian Federal Election following the hashtag #Ausvotes examined 415,009 tweets from 36,287 users over a 6 week time period. Bruns and Burgess (Bruns & Burgess, 2011) found that the discourse was candidate centric. A majority of the mentions collected with the hashtag were of politicians running in the race and also prominent journalists, as they were the ones integral in covering the campaign. The researchers also identified through collection of candidates running in the race that certain politicians did not use the #ausvotes hashtag at all even though they were involved in the campaign. One of the gaps in this research was an analysis of the type of information that was shared on Twitter and a further examination of the at-mentions and at-replys to better understand what these syntactical features represented.

Analysis of technologically mediated discourse surrounding political debates has been an area of burgeoning study and methodological approaches are still being developed (Elmer, Langlois, & McKelvey, in press). Research on one of GOP Primary Debates from the 2012

United States General Election has identified that the promotion of hashtags to allow individuals at home to announce whether they thought the candidate answered the question or dodged it created different communities of discourse (Black et al., 2012). Only 13% of the individuals that participated in the #answer versus #dodge exercise participated in the general discourse related to the debate hashtag #scdebate. Additionally, the device usage between the communities was significantly different illustrating how different user communities may use devices or hashtags differently.

Research on a September 2011 GOP Primary debate found that Twitter discourse before and after the debate was on topic whereas during the event the Twitter participants responded to more specific activity even though this activity was not correlated exactly to the timeline of events (Hu et al., 2012). Similar research has also examined the 2012 Wisconsin Recall Election debates and identified different usage of syntactical features based on the level of participation of users (Mascaro, Black, & Goggins, 2012).

Shamma et al. (Shamma et al., 2010b) analyzed 53,712 tweets from the Twitter public timeline during President Obama's inauguration to identify a set of 13,370 inauguration related tweets. They found that certain activity such as at-mentions dropped when important parts of the inauguration such as President Obama taking an oath and Vice President Biden taking the oath occurred, but increased over time as important events were not occurring. A decrease in the average word count of tweets during this time was also identified. Using this analysis, the researchers were able to segment the broadcast events and further understand the community conversation that was occurring (Shamma et al., 2010b). The researchers conclude that as individuals pay more attention to the onscreen activity they are less likely to be tweeting

extensively and using syntactical features such as at-mentions to highlight or engage with others. We discuss similar behavior in our findings section.

Research Questions

We use the following research questions to frame our analysis of technologically mediated political discourse in the context of a primary debate.

1. How does the use of Twitter specific syntactical features vary by time period (pre-debate, during the debate, post-debate) in the context of a nationally televised political debate?

2. What type of information (e.g. URLs) is shared within Twitter during a televised primary debate?

3. To what extent does the syntactical feature of the at-reply within Twitter activity represent conversational activity?

Dataset

The #cnndebate and #gopdebate data were collected using the 'twitteR' package for the statistical application R. The twitteR package collects the 1,500 most recent tweets with a specified search string when not using Oauth authentication. With authentication it is possible to collect up to 3,200 tweets per query, but with authentication a user may collect tweets not intended for public consumption. In the interest of privacy and institutional research guidelines the authors chose to only focus on public tweets.

The first author used the twitteR package to query for the hashtag #cnndebate, every 45 seconds from 30 minutes before the debate through 3 hours after the conclusion of the debate. The hashtag was promoted by CNN, the debate sponsor and moderator, as a way to concentrate the Twitter discourse on one hashtag. In addition to querying during the debate, twitteR was used

once a day for the three days prior to the debate to collect discourse that occurred in the run up to the debate.

In addition to the hashtag #cnndebate, the authors also collected on the hashtag #gopdebate for the 2 days before the debate and throughout the night of the debate at the same interval as #cnndebate. The collected tweets were combined with the #cnndebate dataset. Only 6,786 (3.5%) tweets had the hashtag #gopdebate illustrating a limited discourse community using that hashtag. We note that 873 of the tweets in our dataset contain both the #cnndebate and #gopdebate hashtag. This number gives validity to the fact that those using #gopdebate during the time period of collection were doing so to engage around the CNN debate.

The tool used for collection does not discern between new tweets and tweets that were already collected and as a result many tweets collected were duplicates. In total, over 300,000 tweets were collected of which 185,420 were unique and were used to construct the dataset. In this dataset there were 44,572 unique users with 23,963 individuals posting only one tweet.

To address previously noted collection inconsistencies by the researchers based on frequency of queries (Black et al., 2012), numerous checks for face validity of the API results were conducted using the Twitter website using the query #cnndebate, during the debate. The results using the website search and the API collection were the same and Black et al. (2012) illustrate that our explicit description of our collection techniques and limitations is both novel and critical for research on Twitter.

Methods

In our analysis we narrowly conceptualize three Twitter syntactical features (Table 1). We identify a retweet as a tweet that has the syntax "RT @[username] text" at the beginning of the tweet. We understand that there are other ways to denote a retweet (Kooti, Yang, Cha,

Gummadi, & Mason, 2012), but the most common Twitter usage of retweet is with that syntax, including when using the Twitter automated retweet button, so we believe that retweets not using that syntax are minimal. We conceptualize mentions as any existence of "@[username]," and further conceptualize an at-reply as any mention occurring in the first position of the tweet. The at-reply conceptualization follows the Twitter specific syntax of the at-mention occurring in the first position of the tweet similar to previous work (boyd, Golder, & Lotan, 2010; Honeycutt & Herring, 2009; Mustafaraj & Metaxas, 2011; Suh, Hong, Pirolli, & Chi, 2010).

[Insert Table 1 Here]

The analysis was conducted through a combination of the statistical program R and network analysis application GEPHI. Using the TwitterZombie infrastructure (Black et al., 2012) and a series of analytical scripts authored by the first author, the collected data are parsed into a series of files. These files include descriptive statistics and measures of the usage of hashtags, mentions, URL's and also network edge lists that can be plotted using network analysis tools such as GEPHI. The data presented in the tables throughout were aggregated using R as detailed in each of the specific findings sections. Network analysis visualizations were done using the "Force Atlas 2" algorithm in the network analysis program GEPHI.

After the initial parsing of the data, the list of URL's that are identified in the text must be run through another script authored by the first author to decode them. Since Twitter shortens URLs to maximize the number of characters for other information, there are many times when the same link may be shortened and then assigned a new link that would appear as though it were unique. For example, "www.washingtonpost.com/cnndebatestory" may be tweeted by two people, but as a result of Twitter's shortening service it may be shortened to two different links

that have the base http://t.co/. Depending on the device used, it is also possible that a full link may be used or that the link input may be from another URL shortening service, such as bit.ly. Therefore, it is necessary to decode the shortened URL's through an iterative process that identifies the actual URL and not the shortened URL. Through analysis of both the shortened links and the decoded links, the authors determined that analysis of the non-decoded links would significantly alter the findings of popular links that were tweeted.

Limitations

Studies that rely on data collected from social media have some limitations. These limitations are often inherent to the study, but not explicitly discussed. The following four limitations in combination with the previous detailed discussion of the dataset give the true context and scope of the study. This context is often overlooked in many studies that examine social media data {Goggins et al., 2012, #54418; Goggins et al., 2010, #31208; Goggins et al., 2012, #19411}.

The first limitation is that the study examines only public tweets that included the #cnndebate and #gopdebate hashtags. It is possible that other discourse occurred within Twitter that was related to the debate that did not include this hashtag, but this collection approach is a limitation inherent to all Twitter studies. Since CNN promoted the hashtag as part of the debate programming, it is likely that the individuals that did not use the promoted hashtag, #cnndebate, did not want their activity included in the thread of debate discourse.

Second, we are not aware of the total number of tweets that used the #cnndebate hashtag beyond the extent of our collection since Twitter did not publicly publish this number. As a result, we are unaware if our dataset is truly representative of all of the discourse related to the debate that occurred on that night. We believe that the large number of duplicates identified in

the previous section illustrates that the dataset is likely representative of a significant portion of the overall public discourse using #cnndebate on Twitter.

Third, we base our analysis on the east coast time zone and do not take into account the possibility of users time-shifting their viewing through the use of digital video recorders. Therefore, it is possible that some of the discourse may be miscategorized as occurring after the debate when it really occurred during the debate. We also feel that because this was a live event on a nationally televised cable news network that the possible affect of time-shifting was mitigated and our large time windows that extend beyond just a couple of minutes helps to address the possibility that individuals would pause the program for a few minutes.

Finally, it is possible that our limit of 1,500 tweets per search may have limited some of the tweets we collected. Although it is possible that some tweets were missed as a result of this limit, we collected data at a consistent rate (1,500 tweets per minute), and believe that our results are no less valid than if traditional sampling techniques were used.

Context

The debate began at 8:00pm EST on November 22, 2011 and lasted for two hours. The topic of debate was foreign policy and national security. The seven participants were Governor Mitt Romney, Speaker Newt Gingrich, Senator Rick Santorum, Congressman Ron Paul, Congresswoman Michele Bachmann, Ambassador Jon Huntsman, Governor Rick Perry and Herman Cain. This was the 14th debate of the GOP Primary cycle and was the last one with these seven candidates as Herman Cain dropped out of the race shortly thereafter. The debate was moderated by Wolf Blitzer of CNN with questions from members of the audience and occurred at DAR Constitution Hall in Washington D.C. sponsored by The Heritage Foundation and The American Enterprise Institute.

Findings

Table 2 illustrates the breakdown of the use of different syntactical features throughout the three distinct time periods (pre-debate, debate, post-debate). Collection began two days before the debate and this allowed for the collection of discourse related to the run up to the debate. The pre-debate time period incorporates the night of November 13, 2011 (when our first tweet was collected) through 8:00 pm eastern on November 22, 2011 when the debate began. The debate time period of the debate includes the 2 hour time frame when the debate occurred and was televised and the post-debate time period incorporates the time period of 10pm eastern through five minutes after midnight on November 23, 2011. The post-debate time period incorporates the televised live post-debate coverage and allows for an analysis of the reaction of the debate on Twitter.

[Insert Table 2 Here]

In total, 82% of the tweets that were collected occurred during the 2-hour window in which the debate occurred. Since we collected using a hashtag as criteria for selection, 100% of the tweets contained a hashtag. Additionally, from the perspective of user involvement, we see that just over half of the individuals posted only one tweet (Singleton). This percentage varied over time and was at its highest pre-debate and post-debate.

The higher percentage of at-replys in the pre-debate time period illustrates that individuals were engaging in conversations before the debate and that these interactions were repeated. The limited number of tweets compared to the overall dataset illustrates that there was less activity before the debate then during or after the debate. This illustrates that the run up to the debate is of less interest than the actual debate and the on-screen analysis that occurs after the debate. Examining the specific conversational activity during the time periods is the focus of a

later section. We now examine URLs, at-mentions and at-replys to identify how they vary based on the different time periods.

Information Exchange Through URL's

The URLs that occurred the most frequently throughout each time period demonstrates the difference in topics of discourse throughout each time period. The number of unique URL's over the three time periods is identified in Table 3. We note that as a result of parsing errors or the fact that some of the links were no longer valid that not all of the links that were tweeted were examined. The total number of links that were unable to be parsed was less than 2% of the total and therefore we believe this to be immaterial in our analysis as this represents a similar limitation identified in other social media research (SalahEldeen & Nelson, 2012; SalahEldeen & Nelson, 2013a; Salaheldeen & Nelson, 2013b).

[Insert Table 3 Here]

We examine URL's in two groups. First, we look at the most popular links throughout the whole corpus and then examine the base of the URL's by time period to further examine the nature of URL's that were being tweeted during each time period. We do not present an analysis of each fully decoded URL during each time period, as it is possible that URLs may traverse multiple time periods.

The top three unique URL's in the complete corpus are links to liveblogs of the debate from Washington Post, CNN and Huffington Post. This illustrates that the most popular source of external information in the context of the dataset were URL's to external sources that are documenting the debate. The fourth most popular URL is actforsudan.org, a website that hosts information advocating for the end of genocide in Sudan. The examined debate was focused on national security and foreign policy and the salience of this URL in the dataset speaks to many of

the issues that were addressed during the debate and this site was also host to an open letter to the GOP candidates from members of the organization.

Other popular URL's that were shared included news stories about the GOP candidate's foreign policies stances or actions. The 12th most tweeted link in the overall discourse was a Foursquare check-in from Mitt Romney from the debate venue. The presence of this URL illustrates the integration of multiple technological presence features that are integrated into discourse, including those from the candidates participating in the debate. This was the only Foursquare check-in from all of the candidates in the dataset (Wolf Blitzer, the debate moderator also checked-in on Foursquare).

Table 4 illustrates the distribution of base URL's by time period. We see that youtube.com is the most popular base URL. Throughout the debate users shared videos highlighting the candidates previous statements. The most popular YouTube video identified throughout the whole debate was a video from the American Enterprise Institute (one of the debate sponsors) entitled "GOP National Security Debate: Foreign Policy is Personal" that was a short video from a family member of a service member. The video served as an advertisement for the debate.

[Insert Table 4 here]

Most of the other base URL's are associated with a news organization or political blog. Two of the most popular base URL's in the pre-debate time period are twitter.com and yfrog.com. Links to twitter.com are the result of individuals in the discourse sharing other individual's statuses and also sharing photos. The prominence of twitter.com in the pre-debate time period was the result of a photo that Jon Huntsman's daughters tweeted of him at the debate.

Yfrog is also a photo-sharing site that had close integration with Twitter. Similar to the high frequency of twitter.com, Yfrog has one of the most frequently occuring base URLs because it was used to share a photo of Wolf Blitzer rehearsing for the debate. In both of these instances, we see the integration and information sharing of data from other technologies that are injected into the Twitter discourse. This integration allows the participants to augment their participation using more than just text.

There is also a heavy presence of social media content from accounts related to the candidates and media personalities that is injected into the discourse. In total, four of the top ten websites that were shared in the pre-debate time period were associated with social media websites (twitter.com, yfrog.com, facebook.com and foursquare.com). All of the content shared using YFrog, Facebook and Foursquare was associated with a candidate involved in the debate, American Enterprise Institute representatives or other media accounts with a concentration on those related to CNN. 90% of the information from Twitter that was shared in this time period came from the same group of individuals. This illustrates a concentration of this content being shared by a subset of individuals. This concentration of augmenting social media use represents a socio-technical context collapse between numerous technologies.

The prominence of this type of activity helps to explain the limited number of tweets and the lower number of singletons in the pre-debate time period. The participants of the activity were promoting their activity to attempt to gain viewers for the debate. This content was being inserted outside of the traditional sources used by the media and candidates who were the primary subjects of the debate. In this case, Twitter was used as an augmenting promotional technology.

Identifying the Subjects of At-mentions

An at-mention is the presence of any Twitter handle in the context of a tweet. Identifying the entities that are mentioned at different time periods during an event may help for identifying the subjects of the overall discourse. Analysis of the at-mentions in the dataset uncovers differences by time period. Most specifically, the pre-debate time period differs from the other two time periods (Table 5).

[Insert Table 5 Here]

The most mentioned account in the pre-debate discourse in the host of the debate Wolf Blitzer. The rest of the most mentioned accounts are easily classified into two groups, those hosting the debate, including the co-sponsors @AEI and @Heritage and candidates (Jon Huntsman, Herman Cain and Mitt Romney). In addition to those accounts associated with hosting the debate, @BorowitzReport (a New Yorker blog) was one of the most mentioned. The high number of mentions for @BorowitzReport was the result of a number of comedic comments made throughout the debate that were retweeted.

During the debate, the moderator of the debate Wolf Blitzer is no longer among the most mentioned account even though he was one of the prominent participants in the debate. Instead, we see that @piersmorgan and @rolandsmartin, both CNN commenters at the time of the debate, become mentioned more frequently. This increase in prominence of these handles occurs as a result of these individuals participating in the discourse using the #cnndebate hashtag. These individuals are also heavily retweeted as a result of this activity, but this analysis is outside the scope of this paper. Additionally, we see that @aishatyler, an entertainment reporter, is also highly mentioned as she was participating in the discourse.

During the debate, we also see a shift in the candidates that are high in at-mentions with Ron Paul becoming the most mentioned candidate. This shift is likely a result of his comments

on national security. As Ron Paul becomes the most mentioned we see that Mitt Romney and Herman Cain are no longer in the top 10. Of the 9,328 unique mentions of Twitter handles that occurred during the debate, all of the candidates that participated in the debate occurred in the top 27, with Michelle Bachmann receiving the least number of at-mentions. This indicates that those tweeting were using the technologically prescribed capability of the at-mention to talk about the candidates that were on the stage.

In the post-debate discourse we see that the top 10 at-mentions are very similar to previous time periods with @washingtonpost becoming the fourth most mentioned. This position is likely the result of @washingtonpost posting after analysis and also facilitating discourse with such tweets as: *"Use #factcheckthis to send us questions about GOP candidates' claims: http://t.co/0N2ZiVYm #CNNDebate."* We also note that @TheFix is heavily mentioned during the debate and after the debate and this account is associated with Chris Cillizza a reporter for the Washington Post that runs a section of the website entitled "The Fix."

The distribution of at-mentions illustrates a notable pattern. There is a mix of individuals participating in the actual discourse and those that are the subjects of the discourse. The candidates that are mentioned do not originate any tweets as they are on the stage, but people using the Twitter syntactical feature of the at-mention technologically identify and concentrate the discourse on the candidates. Additionally, we see that the commenters participating in the discourse are heavily mentioned through the use of the at-mention as a way to highlight discourse to their attention.

Looking at the most frequent mentions is not the only interesting aspect of examining mention behavior. Our data indicate that President Barack Obama was only mentioned 294 times out of over 118,000 total mentions in the data set. The lack of at-mentions of President Obama in

the activity illustrates the focus on the issues that were happening on the television during the debate and not larger issues that would emerge in the general election. Instead of looking forward to the Presidential Election, the candidates on stage were looking to best position themselves to win the Republican nomination and citizen discourse focused on that. This type of activity helps to highlight the unique nature of a primary debate in the political sphere and helps to further highlight the focus on the onscreen events of the participants and not those off of the screen.

Conversational Networks

The placement of an at-mention at the first location of the tweet text is a directed public message that is conceptualized as representing conversational activity (at-reply). Through analysis of the weighted directed network of at-reply messages we can identify the presence of conversation in the unthreaded activity of Twitter.

[Insert Figure 1 Here]

Figure 1 illustrates the conversational network of the complete dataset. There is a strongly defined core and a large periphery that consists of mostly dyads of users who are engaging with each other. Table 6 identifies the weighted degree, weighted in-degree and weighted out-degree for the network. Someone with high out-degree would have originated more messages where as someone with high in-degree would be someone who receives more message.

Those that are receiving messages are more prominent figures in the event. Each of the top 10 individuals in weighted in-degree is either related to the press or is one of the candidates. Wolf Blitzer is the one who receives the most messages directed to him and he is the moderator. In total, 6 of the 7 candidates are in the top 10 and the only one who is not is Michele Bachmann, who was number 12. This demonstrates that individuals were using the at-reply to engage with

individuals that were on the TV or members of the press and signal to the larger audience the subject of their message similar to the utilization of a hashtag.

[Insert Table 6 Here]

In the at-reply network those that have the highest out-degree are not members of the press or any organized group except for "MOforPerry," a group of Governor Perry's supporters in Missouri. The statistics and shape of the network illustrate that Twitter is used by citizens to engage with members of the event that they are watching, even though the candidates cannot respond, as they are currently involved in a debate. Examining these types of networks for individuals who are mentioned often may help to identify the topical content of certain parts of an event.

Identifying Conversational "Engagement"
Tweets that were categorized as an at-reply towards the candidates or debate moderator Wolf Blitzer were further examined to identify whether they represented an engagement attempt. Those tweets that included a question or other statement that was intended to draw a response from the recipient of the at-reply were coded as representing engagement and all others were coded as not marking an attempt at engagement.

The engagement analysis identifies that only 25% of the total at-replys were attempts at engaging the recipient. The percentage varies by time period relative to the debate. Table 7 identifies the percentage of tweets that consisted of an individual specifically reaching out to the Twitter handle and asking a question or attempting to engage with the candidate or the moderator. The largest percentage of engagement (65% of the total at-replys within the time period) occurs in the pre-debate time period. 87% of the engagement attempts in the pre-debate time period were directed at Wolf Blitzer. The reason for this high level of engagement was that Wolf Blitzer asked individuals to tweet him questions for the debate and this activity is illustrated in the data.

[Insert Table 7 Here]

The other time periods (debate and post-debate) have a significantly lower percentage of at-replys that represent an engagement attempt (16% and 11% respectively). These lower percentages in those time periods coupled with the fact that only 65% of the pre-debate at-replys represented an engagement attempt represent that at-replys are not inherently conversational in nature. These findings suggest that the syntactical construction of the at-reply is used similar to the way that a standard at-mention is used. Therefore, there was limited structural difference between the Twitter handle being included in the first position or within the tweet, which suggests that further analysis of at-reply networks should be further examined to identify the intent of the syntactical feature.

Discussion

Our findings illustrate four distinct contributions to the literature on political debates and technologically mediated discourse. The first contribution speaks to what the activity in Twitter represents in the context of political discourse. The significant amount of activity within Twitter during a primary debate illustrates that individuals are interested in the debate along with the candidates and issues that are being discussed in the context of the primary (as opposed to the General Election in the next year). There is limited mention of Barack Obama, one of the most famous figures on Twitter during the debate and the eventual opponent of the candidates on stage during the debate. Therefore, the syntactical features of hashtags and at-mentions are used to engage about what is happening at that point and not in the future or in other prominent political issues or actors.

Although there is a lot of activity, the lack of conversational activity may represent a public that is still phantom as conceptualized by Lippmann. Some aspects of Dewey's notion of the need for better communication technology have been realized with the introduction of the Internet, but not fully adopted. As identified in the findings, when given the construct to engage in conversation, the public does not adopt it. The engagement analysis further highlights that even those tweets identified syntactically as conversational are truly not.

As these technologies facilitate better communication, they also facilitate more distraction. The majority of tweets during the debate are individuals commenting on the activity and not necessarily sharing anything constructive as there are a limited number of URLs, at-mentions and retweets that are shared as compared to other times of the debate. Even with the limited sharing there are a significant number of individuals that interact repeatedly throughout the dataset.

There is limited evidence that Twitter and the primary debate represent the six criteria specified by Dahlberg for the realization of a technological public sphere. The technological environment allows for autonomy from state and economic power, the ability for role taking and sincerity, but there is no evidence that there is any "exchange and critique of reasoned moral-practical validity claims." There is also limited reflexivity given the limited amount of conversation and high number of singleton participants throughout all time periods, specifically before and after the debate when activity was much slower paced and such conversation could occur without missing onscreen activity.

The absence of the realization of the technological public sphere is further highlighted in the secondary analysis of the at-reply messages. Individuals used the at-reply syntactical feature, but did not use it to engage in conversational activity even though the construct existed. Instead,

individuals used it to highlight material to the candidates and moderator of the debate, as they would use a regular at-mention. This is in direct contrast to previous conceptualizations and findings related to the use of the at-reply (boyd, Golder, & Lotan, 2010; Honeycutt & Herring, 2009; Mustafaraj & Metaxas, 2011; Suh, Hong, Pirolli, & Chi, 2010). These findings require further research to identify the manner in which individuals employ the syntactical feature across all research that examines the at-reply.

The second contribution is that "big data" can be used to further understand real-time political discourse. Examining how individuals engage with each other and exchange information surrounding specific events is possible, and has potential implications for research related to technology and political science. Previous research that has examined citizen response to electoral debates has used a variety of methods that have limited generalizability and understanding of the outcomes. Analysis of Twitter data does not require researcher intervention or interaction with participants.

What is being said on Twitter or other social media platforms at a specific time enables new insight into citizen participation. Parsing the data by syntactical features helps to make better sense of the actual activity and gives greater insight into individual behavior. We see that a significant number of the tweets occur during the debate, but that this activity is differs from the activity before and after the debate, especially with the number of at-mentions and URLs. In this case, Twitter users are engaging in the technology to comment on the activity and not necessarily to engage with each other.

These methodological advantages that help to give this insight do come with some limitations, such as the possibility that the large sample of Twitter users may also not be representative of the overall population. For example, Twitter users tend to be more affluent and

there is a potential for the discourse to be gamed or influenced by the media and spammers. Although this is a possibility, post-activity analysis may help to uncover this activity and lead to further insights of the implications for future debates.

The potential for understanding the civil discourse and political process in new ways, combined with the risk of manipulation move traditional discussion around media influence into a new territory. In this new world, influence comes from new sources that include citizens, and citizen provocateurs, but just as citizens can be the provocateurs, media personalities can also blend in and with the public during the activity as evidence in the findings. This helps to drive the discourse around a topic, especially when journalists are heavily involved in the discourse while the event is happening.

The third contribution of this paper is in the further understanding of how individuals engage with each other and with politicians using technologically mediated means and how this differs temporally related to an event. The hashtag represents a community of discourse specific to an event and through this community, individuals engage not only with each other, but also attempt to engage with elected officials and members of the media using specific syntactical features such as the at-mention or at-reply.

Citizens use the combination of the at-mention to highlight specific information to candidates and the media and also use it to reach out to them although this is not always intended as engagement. Although there is no response from the candidates, this type of technological identification could be used to foster a two-way communication channel between a candidate and the public.

In addition to the presence of elected officials, the presence of the media also may help to facilitate better discourse. Our findings illustrate that the public was interested in not only

engaging with the candidates, but also engaging with the media and specifically those members of the media that were on the television. This is evidenced by the high number of mentions of accounts related to media personalities. In the case of the debate moderator Wolf Blitzer, Twitter is a feedback mechanism for citizens to suggest possible questions for the debate. Additionally, other media personalities such as Roland Martin and Piers Morgan are heavily involved in the debate discourse as they are live commenting on the debate alongside citizens.

Similar findings have been observed in electoral discourse that help to situate these findings. In an examination of the 2010 British general election, Chadwick (2013) found that Twitter played an integral role in the political information cycle. As prominent news events such took place citizens engaged with the media through using Twitter. Analysis of tweets from a debate that occurred during that campaign illustrates similar findings to this work. Journalists tweeted photos of the set and along with real-time commentary before, during and after the debate. The similarity between the findings in the UK and the US highlight that the political information cycle in the two countries may be similar and that the manner in which individuals engage with the media and how the media engages with individuals and the political context is shared. This highlights the need to further examine the environment that this activity occurs within.

The fourth contribution is an understanding of how specific types of information such as URLs and multimedia are adopted and proliferated through a network by individuals during different time periods of an event. Our findings illustrate that social media and user-generated content such as photos and Foursquare check-ins from candidates are prominently shared within Twitter, but this sharing is concentrated in one time period. Candidates no longer rely on one

communication medium. Instead, candidates use one medium as a transport channel of other activity that they are also engaged in.

In the most prominent example in this dataset we see that Mitt Romney's Foursquare check-in was one of the most shared URLs in the dataset. Even though Mitt Romney's following on Foursquare was more limited than his Twitter following, he was still able to inject this activity into the discourse and expose it to the public through the Twitter context. This represents a new form of power that is potentially derived from the number of Twitter followers a candidate has, and how interesting or compelling a candidates Tweets are and the type of information that they share.

Through analysis of how the public responds to specific information that is tweeted or how individuals are sharing specific information such as campaign information through URL's, it may be possible to further craft a message that resonates with certain groups of users. If there are a significant number of individuals sharing a controversial campaign statement by a candidate before a debate, then it is possible for the candidate to have a response crafted before the debate to help further explain or downplay the remarks. The analysis of discourse that is carried out in these technological mediated means coupled with the analysis of how users responded to specific activity and information may be the greatest campaign targeting tool to date.

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Tables and Figures

Table 1: Twitter Syntactical Features conceptualized

Syntactical Feature	Common Syntax	Purpose
At-Reply	@[username] at first position of tweet text	To directly address another individual in a public manner.
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.

Table 2: Syntactical Feature Breakdown

Time Period	Tweets	URL	Mentions	@Reply	Retweets	Singleton
Complete	185,420	7.22%	52.60%	4.11%	42.88%	53.76%
Pre-Debate	10,750 (6%)	28.99%	71.54%	9.00%	48.83%	71.77%
Debate	152,059 (82%)	5.08%	48.32%	3.82%	39.55%	51.35%
Post-Debate	22,611 (12%)	11.26%	72.38%	3.74%	62.43%	69.11%

Table 3: Unique URL's by Time Period

Time Period	Unique URL's
Complete Debate	4,808
Pre-Debate	1,464
Debate Only	2,558
Post Debate	1,036

Table 4: Top Base URL's by time period   ***Denotes a website focused on user-generated content

Pre-Debate	Debate	Post-Debate	Complete Debate
youtube.com ***	youtube.com ***	youtube.com ***	youtube.com ***
blog.heritage.org	washingtonpost.com	washingtonpost.com	blog.heritage.org
twitter.com ***	huffingtonpost.com	huffingtonpost.com	twitter.com ***
yfrog.com ***	twitter.com ***	elections.nytimes.com	washingtonpost.com
aei.org	heritage.org	rickperry.org	huffingtonpost.com
cnn.com	elections.nytimes.com	twitter.com ***	elections.nytimes.com
washingtonpost.com	politicalticker.blogs.cnn.com	politifact.com	cnn.com
facebook.com ***	blog.heritage.org	dailycaller.com	heritage.org
huffingtonpost.com	opensecrets.org	blog.heritage.org	aei.org
foursquare.com ***	rickperry.org	ronpaul2012.com	yfrog.com ***

Table 5: Top Mentions by time period

Pre-Debate	Debate	Post-Debate	Complete Debate
wolfblitzercnn	BorowitzReport	BorowitzReport	BorowitzReport
Heritage	piersmorgan	piersmorgan	piersmorgan
JonHuntsman	TheFix	RonPaul	TheFix
CNN	RonPaul	washingtonpost	RonPaul
BorowitzReport	rolandsmartin	rationalists	Heritage
AEI	dickmorristweet	JonHuntsman	rolandsmartin
THEHermanCain	JonHuntsman	THEHermanCain	JonHuntsman
MittRomney	rationalists	Heritage	THEHermanCain
WolfBlitzerCNN	Heritage	rolandsmartin	dickmorristweet
donnabrazile	aishatyler	TheFix	wolfblitzercnn
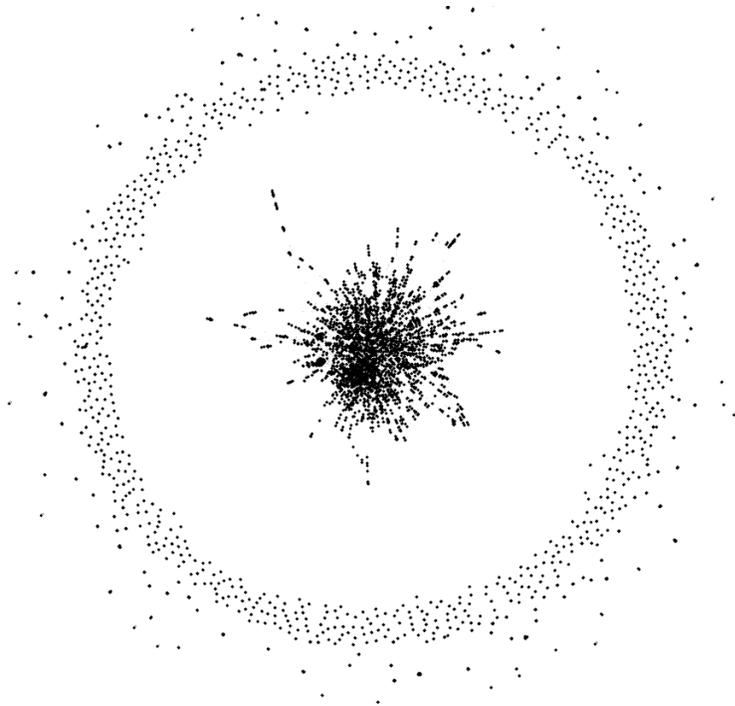
Figure 1: Complete Conversation network

Table 6: Network Statistics for the Conversation network

Weighted Degree	Weighted In-Degree	Weighted Out-Degree
wolfblitzercnn	wolfblitzercnn	fishinsam
CNN	CNN	TermLimtCongres
RonPaul	RonPaul	DavidMDrucker
newtgingrich	newtgingrich	RepublicanRocks
MittRomney	MittRomney	PoliticsIn01245
THEHermanCain	THEHermanCain	ryan_printy
GovernorPerry	GovernorPerry	donna816
JonHuntsman	JonHuntsman	24AheadDotCom
piersmorgan	piersmorgan	GOPBlackChick
cspanwj	cspanwj	MOforPerry

Table 7: Percentage of At-replys Representing Engagement

	Pre-Debate	Debate	Post-Debate
At-Reply Engagement	65%	16%	11%

Percentage of at-reply tweets directed at Wolf Blitzer	87%	24%	13%