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*Journal of Business and Technical Communication* published online 30 August  
2013

DOI: 10.1177/1050651913502358

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Journal of Business and Technical

Communication

00(0) 1-26

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DOI: 10.1177/1050651913502358

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## Abstract

Networks have a remarkable ability to bring people together in communities, both online and offline, but such community building is not the only possible result of network use. This article examines the case of a tagging network on Twitter, the online social networking service characterized by short messages. Although Twitter has many social features that foster interaction between users, the use of hashtags to signal the topic of a message exists outside of the site's primary social structures, creating a unique writing environment. This article analyzes a hashtagged exchange surrounding the 2009 health care debate in the United States, examining the social features of this exchange and how participants used it to communicate about that debate. While traditional social features were certainly present within the exchange, they were not prominent or common; rather, users engaged the network properties of this exchange to make connections with other networks, drawing on a form of network power called switching. The analysis focuses on how the Twitter network's structural features affect communication between users.

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**Keywords**

networks, social networking, network power, tagging, health care, microblogging

Professional communication scholars have long been interested in digital technologies and their impact on knowledge workers. “The digital age prompts us as communicators and scholars to redefine the traditional confines of rhetoric,” Walker Pickering (2009) argued, going on to write that these new confines should “include communication, collaboration, and interaction at a variety of levels using different media and communication patterns” (p. 169), focusing specifically on how these patterns affect “socially constructed communication” (p. 168). Such socially constructed communication is largely defined by digital networking technologies, and as Thacker and Dayton (2008, p. 384) argued, exchanges in these networked spaces allow researchers to observe professional communicators and “creat[e] knowledge” about them and their patterns of communication.

Yet, identifying practices of “communication, collaboration, and interaction” (Walker Pickering, 2009, p. 169) within the many emerging and connected media environments of the Web has proved to be a challenge because there is no simple way to account for networked writing practices that use multiple technologies. One response to this challenge has been to focus on social media, particularly on writing practices that involve groups and the ways in which the “shared online collaborative spaces” created by these media can be used for “perform[ing] all sorts of knowledge work” (Spinuzzi, 2009b, p. 251). For example, in their study of networked collaboration, McNair and Paretti (2010) underscored the role of “social and affective language practices” (p. 330) within networked systems and the effects of networking tools on those practices, emphasizing the extent to which networking technologies “structur[e] social relationships” (p. 332). Similarly, Haas, Carr, and Takayoshi (2011, p. 283) argued that nonlinguistic elements of communication and language practices serve to facilitate the “social process in which texts are embedded.”

Although social networks have always been a key feature of communication practices—social networks predate digital communication—it is not clear whether what qualifies as social outside of these networks can be strictly mapped onto what we refer to as social online. boyd and Ellison (2007) have distinguished what they call “social network sites” (SNSs), where most users interact with individuals who are already in their off-line social circles, from “social networking,” through which individuals attempt to expand their social circles by meeting new people (in this article,

I use *social* to refer collectively to these two forms of social networking). Yet, the emergent properties of online, networked communication have enabled user interactions that do not easily map onto either one of these descriptions. Professional communication researchers have argued that the unique features of networked social media environments challenge professional communicators to rethink the role of rhetoric and communication within those environments, and one of these unique features is the social process that enables information gathering and sharing. While this research is important, it has left largely unexplored the networked communications that are not easily categorized as part of social networks.

Consider the case of Twitter. As an SNS, Twitter allows users to create profiles and connect their profiles with those of other users, establishing social connections between them. For many, these social networks constitute the site's primary interface. Certain Twitter features, however, allow users to interact with those outside of their social networks. The most notable of these features are *hashtags*, the use of the hash (#) symbol in front of a word or phrase to tag the content of the message ("Using Hashtags on Twitter," 2013). Hashtags are forms of metadata—"data about data" (Whittemore, 2008, p. 92)—and are frequently used to concisely share semantic information about Twitter messages, or tweets, within the site's 140-character posting limit. Twitter users are increasingly capitalizing on the networked nature of these hashtags to generate wide-ranging conversations that transcend Twitter's social networks.

In this article, I examine how digital networking tools enable networked communication that transcends social networks, arguing that this communication is not necessarily a failure of community or collaboration but rather an expression of networked power. I do so by asking how hashtagged exchanges are used as metadata (Stolley, 2009) and the extent to which they depend on response (Rice, 2009). To answer these questions, I examine a hashtagged exchange that occurred in the late summer of 2009. In the middle of an intense national debate over health care reform, President Obama delivered a speech to a joint session of Congress intended to shore up support for the reform process, which was then seen to be flagging. I look at tweets containing the #healthcare hashtag that were sent just before, during, and after this speech, categorizing them across two dimensions: their inclusion of Twitter's various structural features and their content.

## Networks and Collaborative Tagging

Professional communication scholars have recently explored the importance of tagging, both as a form of knowledge curation (Panke & Gaiser,

2009) and as a means of modifying “work environments” (Stolley, 2009, p. 352). Thus, professional communicators have begun to see tagging as a potentially important tool that not only allow them greater control over their own data but also improves their ability to share that data with others via the manipulation of tags in “sophisticated customizations and mash-ups” (Stolley, 2009, p. 352). Twitter seems to provide an ideal environment for such “customizations,” and hashtag use frequently transcends mere tagging to enable the creation of networks that exist outside of users’ individual social networks (Lindgren & Lundström, 2011; Segerberg & Bennett, 2011). Potts and Jones (2011) suggested that sharing, recontextualizing, and reappropriating information on Twitter allow users to create customized views of that information within the framework of the site, and such customizations are “always linked to the capacity to effectively find and move information” (p. 341).

This customization is apparent in the backchannel communication in which individuals use hashtags to comment on activities that happen off-site. On Twitter, this backchannel communication allows for “meaning-making” to be “negotiated collaboratively,” or socially, McNely (2009, p. 299) argued, because it is unconstrained by the “formal strictures” that limit writing in other systems, even other networked writing environments. Yet, this meaning making is not free of conflict. Although Panke and Gaiser (2009) discovered that in their study most individuals used tagging to manage personal rather than shared knowledge (p. 343) and that tagging helped these knowledge workers to “visualize . . . interconnections” and organize their activities (p. 346), they also identified “tensions between individual and corporate uses of tags” (p. 345). The presence of such tensions problematizes the characterization of this communication simply as collaboratively negotiated meaning making, terminology that implies some form of mutual, social collaboration. Such collaboration does exist on Twitter, but it does so against a backdrop of networked tools such as hashtags that cannot be simply characterized as social in the SNS or social networking senses of the term.

Investigations of networked communication are not new to professional communication research. Responding to Johnson-Eilola’s (2005) description of online work, (p. 105) Rice (2009) has argued that networked exchanges are crucial to understanding online writing in that they “distribute writing across authors and places of writing,” thus “chang[ing]” the “identity of online communicative practices” (p. 296). By allowing for such nontraditional exchanges, hashtag networks suggest a form of what Rheingold (2012) has called “many-to-many” networks (n.p.). Salvo,

Pflugfelder, and Prenosil (2010, p. 251) described these networks as a form of chora that provide “emergent messages” manifested in “technocultural network[s]” such as Twitter. Rice (2009) argued that networked exchanges conducted via message boards and blogs rely on the principle of response (p. 297). Such descriptions seem apt because businesses increasingly use Twitter and other forms of social media for interactive purposes such as customer service (Thoring, 2011, p. 142). Twitter’s hashtags, however, exist at the intersection of blogs and crowdsourced tagging, and it is not clear how the characteristics of these technologies apply to the exchanges created by hashtagging. In the following discussion, I use *networked exchange* to describe networked communication by multiple authors that can be aggregated together.

In their study of the #egypt hashtag, Papacharissi and de Fatima Oliveira (2012) argued that hashtag use is a “user-generated collaborative argument on what is news” and that crowdsourced, collaborative hashtagging by individuals “exploit[s] the affordances of the Twitter platform more aggressively and innovatively” than do the SNS-style approaches adopted (at the time of their study) by major media organizations (pp. 267–268). Yet even while acknowledging some of the unique affordances of hashtagging, the authors associate hashtags with sociability, concluding that they are an extension of Twitter’s use as “a social awareness stream” (p. 268). The potential for sociability within hashtagged exchanges—networked exchanges made possible by hashtag use—was also noted by Lindgren and Lundström (2011), who studied the exchange surrounding the #wikileaks hashtag. They discovered that communication patterns in the #wikileaks exchange suggest that participants used Twitter to create shared meanings as the grounds for group action (p. 999), comparing this exchange to Ito’s networked public, “a participatory and collaborative environment where technology and tactics are used and developed, where interests are shared, where meanings are appropriated, re-made and re-distributed and where enthusiasts and volunteers create something together” (p. 1000). This comparison reinforces an understanding of hashtag use as a form of modifying a user’s communication environment but focuses on the use of Twitter as “a site of resistance [and] mobilization” rather than on “its seemingly open, fluid and anarchistic” features (p. 1015).

Although I do not question the social features that these authors have identified in the #egypt and #wikileaks exchanges, it is not clear that such sociability is inherent in the use of hashtags. For example, Small (2011, p. 872) noted the openness of Twitter’s hashtag communities, but she found “dialogue” to be “rare” in her analysis of a political hashtag in Canada.

Similarly, in their study of the use of hashtags to enable backchannel conversation at academic conferences, Ross, Terras, Warwick, and Welsh (2011) found that hashtagged exchanges consisted primarily of “multiple monologues” along “with a few intermittent, discontinuous, loosely joined dialogues” rather than “a single distributed conversation” (p. 214).

What these studies suggest is that hashtagged exchanges consist of a range of communicative behaviors, both social—in the sense of SNSs and social networking—and not, and that research into emerging uses of this tool is still necessary. Spinuzzi (2009b) has argued that a long-term goal for professional communication research is to understand how social media networks can be used “to create and manage conditions for successful professional communication” (p. 257), whereas other professional communication scholars have shown that short messaging and microblogging have been accepted as “a viable tool for knowledge work” (McNely, 2009, p. 302) and as an “emerging workplace literacy” (Haas et al., 2011, p. 278), respectively. If such writing is a “social process” (Haas et al., 2011, p. 283), and if Twitter’s hashtags, as networked exchanges that transcend the social norms of SNSs and social networking, represent a new wrinkle on online social behaviors, this suggests that we need further research on the nature of hashtagged exchanges and the extent to which they do and do not incorporate these social features. As knowledge workers increasingly rely on networked communication and work in distributed groups, professional communication scholars must provide a better understanding of the patterns of use that are evident within networked exchanges.

## **Background**

In this section I describe the 2009 debate over health care reform and the structural features of Twitter relevant to the study.

### *Health Care Reform*

Health care reform was a central topic of the 2008 U.S. presidential campaign, with each of the major candidates introducing plans for modifying the current U.S. system.<sup>1</sup> Following his election, President Obama made this campaign issue one of his top legislative priorities and encouraged Congress to craft and then present for a vote a bill to overhaul the health care system. This process lasted for most of 2009 and the beginning of 2010, leading to the final passage of a health care bill in March 2010. Even though the president actively campaigned on this issue and won his election by a respectable

margin, this did not translate into a mandate on health care reform, and he faced significant opposition on this issue from Republicans. Consequently, the period of time from his announcement of this priority to the eventual passage of a bill was characterized by a highly contentious national debate.

The White House's strategy for the reform process, as Skocpol and Williamson (2010) noted, was to outline broad principles for reform but leave the details of implementation to Congress. In contrast to the failed reform effort of the Clinton administration, this strategy was seen as a means of satisfying different constituencies "in an environment of entrenched opposition (p. 1216)," thus ensuring the eventual passage of a reform package. This opposition was not confined to the opposition party, however. Although the Democrats had a majority in the House of Representatives and a filibuster-proof supermajority in the Senate through 2009, with the political climate ensuring that no Republicans would vote for Democrat-created plans, any plan for reform needed to satisfy all Democratic constituencies, particularly conservative Democrats. In this environment, the White House's strategy was designed to encourage Congressional Democrats to arrive at solutions that "could actually pass the House and Senate" (Skocpol & Williamson, 2010, p. 1216), and rather than dictating those solutions, as the Clinton administration did, it aimed to have different ideological factions in the Democratic caucus develop them through negotiation. After months of these negotiations, by early 2009 three different health care plans existed: One was developed by the Democratic majority in the House, and two were produced by Senate committees as drafts of bills, the first by the Health, Education, Labor and Pensions Committee and the second by the Senate Finance Committee. These different bills contained unique solutions to reforming the health care system, and by the time of the Congressional recess in August 2009, it was not clear which provisions would eventually be put before the two houses for a vote.

In addition to the legislative wrangling, the reform process sparked a wide-ranging public debate, and one of the ways that debate manifested itself was on social media sites such as Twitter. This debate became highly visible when, during the Congressional recess in August, it erupted into a public backlash against the health care reform process, in which the three draft plans were "likened on talk radio to something out of Hitler's Germany" and "lambasted by protesters at Congressional town-hall-style meetings" ("Health Care Reform," 2010). Reflecting the debate occurring on social media, these town hall meetings exhibited networked features, particularly in their inclusion of multiple constituencies that lacked shared ideological goals but rallied together to challenge the health care proposals (Spinuzzi, 2009a). These events contributed to an erosion of public support

for the overall reform effort and called into doubt the possibility that one of these three bills, or any bill, could secure the necessary votes to gain passage. Some critics argued that this impasse came about because the president himself had not weighed in on the debate by providing his own plan (he would not do so until February 2010). So President Obama's speech on September 9, 2009, came at a low point for Democrats in the health care reform process, and the speech was seen as an attempt to both reignite public support and provide leadership for the Democratic caucus.

In his speech (Obama, 2009), the president continued his strategy of outlining broad reform goals rather than specific policies, using his platform to advance these goals and to answer critics of current proposals. In the process, the president acknowledged the partisan nature of the current health care debate, decrying the "scare tactics" that he claimed had replaced an "honest debate," using this characterization as a springboard to address some of the claims that reform opponents were making. One of those claims was that health care reform would provide coverage for illegal immigrants, and this claim became the basis for partisan arguments during the speech itself. After Obama stated that this claim was "false," a member of the audience, quickly identified as South Carolina congressman Joe Wilson, shouted, "You lie!"—an outburst that was met with boos in the chamber but strong support by some conservatives, including participants in the #healthcare exchange. The *New York Times* noted that Wilson's "outburst led to a six-day national debate on civility and decorum" capped by the congressman being "formally rebuked" by the House on September 15 ("Health Care Reform," 2010).

Obama's speech immediately produced a renewed sense of urgency for supporters of the reform process, along with a brief polling bump in the following days as public sentiment shifted more positively toward reform. This shift was only temporary, however, because the process underwent many changes in the following months. In short, the speech served as a representative event in a wide-ranging debate about government policy and overreach as well as about public decorum and deliberation. Although such debates are a fact of politics, the Twitter messages in this data set offer a glimpse into a part of that conversation that had previously been inaccessible to researchers: informal, real-time responses. The following analysis attempts to make sense of these responses and account for the unique networking features that they represent.

## *Twitter*

Twitter is both a microblogging site and a social networking site. Microblogging sites mimic the formal conventions of blogs, but individual posts

are generally quite short (“Microblogging,” n.d.). On Twitter, posts are restricted to 140 characters. As with other SNSs, Twitter allows users to create profiles with at least some public features, to establish connections between their profiles, and to view other users’ connections (boyd & Ellison, 2007). A distinguishing feature of SNSs is that “they enable users to articulate and make visible their social networks” (para 6). Not only does Twitter make these networks visible, but it also makes them the primary interface that greets its users. When logging onto Twitter, users are presented with the most recent tweets from those they follow. As I have described, boyd and Ellison (2007) chose the term *SNS* over the more common “social networking site” to distinguish the activity that occurs on these sites from the traditional, predigital practice of networking with social or occupational peers for the purpose of expanding one’s social circle. In the case of such social networking, “‘networking’ emphasizes relationship initiation, often between strangers” (para 5) but research on SNSs has shown that this type of behavior is not the most common use of these sites. Rather, users’ online networks typically comprise people whom they know off-line. Hashtagged exchanges are unique in that they transcend individual SNS networks but also allow for increased interaction between different networks of users in a way that is not like predigital social networking.

The three most prominent of Twitter’s structural tools are @replies, the use of the “@” sign before a username in order to address messages to specific users; hashtags; and retweets, messages that repost the content of another message. Twitter users also frequently use the site to share links to other online resources, and the site and many third-party Twitter clients automatically convert URLs that are included in messages to clickable links. Hashtags and @replies predate Twitter—both conventions originated in the protocols of Internet Relay Chats (Makice, 2009, p. 10)—but retweets have emerged as a unique form of Twitter communication. In each case, however, users have had a hand in adopting these communicative tools for managing information flows within exchanges on the site. (See Table 1 for the list of Twitter terms addressed in this study.)

## Description of Data Set and Methodology

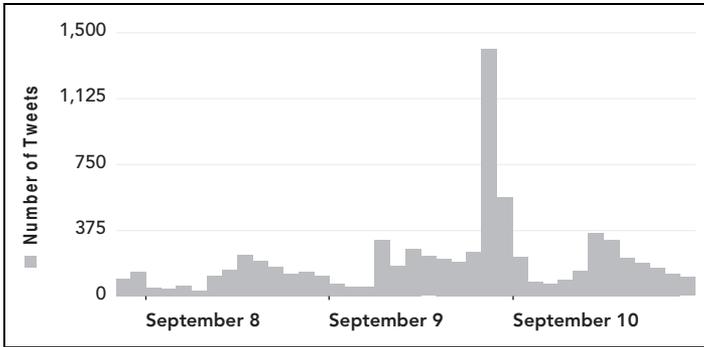
The data set in this study consists of 7,647 publicly available tweets that included the #healthcare hashtag in 2009. These tweets were collected from the public archive at TwapperKeeper.com (see Figure 1). In analyzing the data set, I identified the structural features in the messages and coded the messages for content using the grounded theory methodology (Glaser & Strauss, 1968) to

**Table 1.** Twitter Terminology.

Term	Description	Example
@Reply	A means of addressing another Twitter user in a message by including an @ symbol followed by the username, as in @username	@KEder Not alternate solutions that address the needs of #healthcare for all. A re-writing of the status quo is not an alternative
Hashtag	A word or short phrase preceded by the # symbol. These tags originated as a means of providing metadata about a tweet, such as its topic or related key words	Health IT Hashtags: #HealthIT #HIE #EHR #EMR #PHR #interoperability #healthcareIT #hchit #hcsn #hcmktg #hitpol #healthcare others?
Retweet	When a Twitter user reposts the message of another user, generally signaled by the prefix RT and sometimes by retweet or via followed by an @reply mentioning the original poster	RT @WestWingReport: WH has accused Repubs of scare tactics on #healthcare bt Obama will use them tonight:"If we do nothing ... more will die"
#hcr	One of a number of hashtags, including #hc09 and #healthcare, used to refer to the health care reform debate	Who would you rather decide the quality of #hcr <a href="http://bit.ly/lSXDg">http://bit.ly/lSXDg</a> Or <a href="http://bit.ly/IOJ24">http://bit.ly/IOJ24</a> Choose Innovative #healthcare #hc09 #hcr Options!
#tcot	An acronym for top conservatives on Twitter, this popular hashtag indicates the relevance of a tweet to the conservative community on Twitter	Aides: Pres to be very forceful in Wednesday address (losing his cool perhaps?) <a href="http://bit.ly/10833w">http://bit.ly/10833w</a> #tcot #ocra #healthcare #iamthemob
#p2	Short for progressives 2.0, this hashtag indicates the relevance of a tweet to the progressive community on Twitter	<a href="http://bit.ly/v3Omm">http://bit.ly/v3Omm</a> Ungar: GOP to Unplug Grandma. @hcan #healthcare #publicoption #hc09 #singlepayer #p2

generate categories. By cross-referencing the content and structural features of these messages, this study aims to characterize the usage patterns—particularly the role of social communication—within this networked exchange.

I coded messages for the following structural features: Web links, @replies, hashtags (in addition to the #healthcare tag, which appeared in all tweets in the data set), and retweets. I identified these features automatically from the following text strings: <http://> (for Web links), @ (for @replies), # (for hashtags), and RT, retweet, and via (for retweets).<sup>2</sup> Using the grounded



**Figure 1.** Histogram of tweets in 2-hour intervals.

theory methodology (Glaser & Strauss, 1968), I identified the following categories for coding the content of the messages: sharing, address, commentary, request, and status update. Table 2 contains descriptions of these content categories and example tweets from each category.

## Results

The results of my analysis of the structural features of the tweets showed that the most prevalent of these features was hashtags, with 62.8% of messages containing hashtags in addition to #healthcare. Web links appeared in 53.8% of the tweets, @replies appeared in 35.1% of the tweets, and 27.0% of the tweets were retweets. Table 3 shows both the numbers and the frequencies of the structural features. Because individual messages often contained multiple structural features—a single message might contain a Web link, an @reply, a retweet, and a hashtag—the sum of the columns is greater than the total number of tweets in the data set. Table 4 shows the numbers and frequencies for the content types of the tweets. The most common content type in the set was sharing, which constituted 60.8% of the total. The next most common was commentary, which accounted for 16.1% of the tweets. Address, requests, and status updates accounted for 13.8%, 3.2%, and 6.0% of the tweets, respectively. To gain a more nuanced insight into the interaction between the structural features of Twitter and the content of these messages, I cross-referenced these two dimensions, accounting for the number of structural features that appeared within each content type. Table 5 lists the numbers of these features by content type, and Table 6 lists the frequencies of the structural features by content type.

**Table 2.** Content Categories With Descriptions and Example Tweets.

	Description	Example
Sharing	Shares a resource (link, quotation, etc.) with or without a description	Total spending on health care per person. United States: \$7290 U.K: \$2992 Italy: \$2686 Spain: \$2671 Japan: \$2581 (2006) #healthcare
Address	Addresses another individual or group	@Stranahan For every dollar profit earned by ins companies govt inefficiency/waste/fraud will cost least double that. #healthcare #obama
Commentary	Comments on an event, a shared resource, or a tweet	#HCR is needed NOW! Americans are Sick & Broke with the current #healthcare system. #hc09
Request	Asks a question or makes a resource request	Anyone get a robocall from GOP "saying that Obama's #healthcare plan will pay for abortions." (PLS RT) #robos #P2 #HCR
Status update	Provides information about current location, actions, or circumstances	#Obama says someone like me is a liar bc I don't agree w/ his #healthcare views. I am hurt and confused and confused . . . and hurt

**Table 3.** Structural Features of Tweets.

Type	Number	Frequency
Web links	4,117	0.538
@Replies	2,682	0.351
Hashtags	4,803	0.628
Retweets	2,064	0.270
RT	1,935	0.253
retweet	26	0.003
via	169	0.022

### *Conversation, Hashtag Use, and Sharing*

The results of my cross-referencing analysis showed little evidence of conversation, a high frequency of hashtag use, and a focus on sharing in these messages.

**Table 4.** Content Coding for Tweets.

Type	Number	Frequency
Sharing	4,651	0.608
Address	1,057	0.138
Commentary	1,233	0.161
Request	248	0.032
Status update	458	0.060
Total	7,647	

**Table 5.** Number of Structural Features by Content Type.

	Sharing	Address	Commentary	Request	Status Update	Total
Web links	3,784	222	18	28	65	4,117
@Replies	1,430	813	276	58	105	2,682
Hashtags	3,180	553	673	139	258	4,803
Retweets	1,360	280	294	56	74	2,064

**Table 6.** Frequency of Structural Features by Content Type.

	Sharing	Address	Commentary	Request	Status Update	Total
Web links	0.814	0.210	0.015	0.113	0.142	0.538
@Replies	0.307	0.769	0.224	0.234	0.229	0.351
Hashtags	0.684	0.523	0.546	0.560	0.563	0.628
Retweets	0.292	0.265	0.238	0.226	0.162	0.270

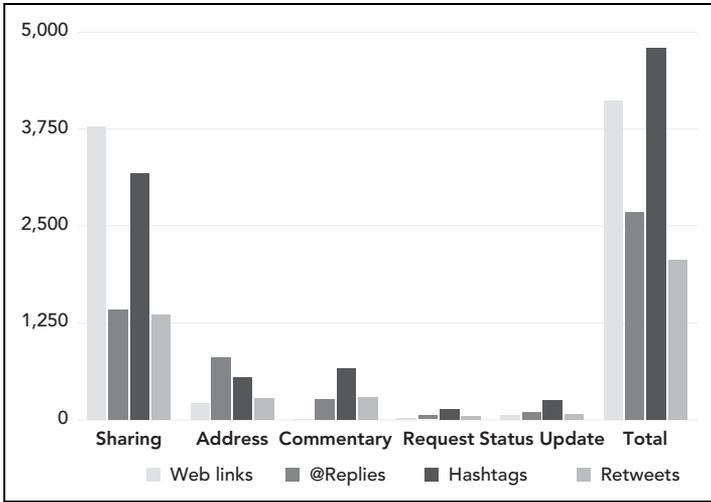
*Little Evidence of Conversation.* The messages that directly address other Twitter users or outside groups—or ones that query other users for information—are those that most suggest the presence of conversational behavior. Such messages typically imply that a response is expected from that person or other individuals in the addressed group, and as I have mentioned, Rice (2009) has identified such response as a key feature of networked exchanges on blogs and forums. Addresses and requests, however, represented only 13.8% and 3.2% of the messages sent in the #healthcare exchange, respectively. Whereas more than three quarters (76.9%) of address tweets included the @user construction, 26.5% of these messages were retweets, leaving only 50.4% of the address tweets as true @replies addressing other users.<sup>3</sup> In contrast, only 23.4% of the requests contained the @user construction, and 22.6% of these were retweets.

The pattern seen in requests—in which @replies primarily appeared in retweets—holds for the remaining three categories as well. Sharing, commentary, and status updates had 1.5%, 0%,<sup>4</sup> and 6.7% nonretweet @replies, respectively. As Table 6 indicates, @replies were used most frequently within address messages. Although that is unsurprising because @replies by definition address other users, the total presence of nonretweet @replies—only 8.1% of the total tweets—is somewhat low when compared to previous Twitter studies. For example, Kwak, Lee, Park, and Moon (2010) found that after they removed retweets from the total of @user messages, 14.8% of the messages in their data set were some form of @reply. And boyd, Golder, and Lotan (2009) found a much larger percentage, with 33% of messages in their data set being @replies. Although we cannot draw strong conclusions from these few comparisons, these earlier results indicate that there were fewer @replies in the #healthcare network than might be expected in a more general sample of tweets.

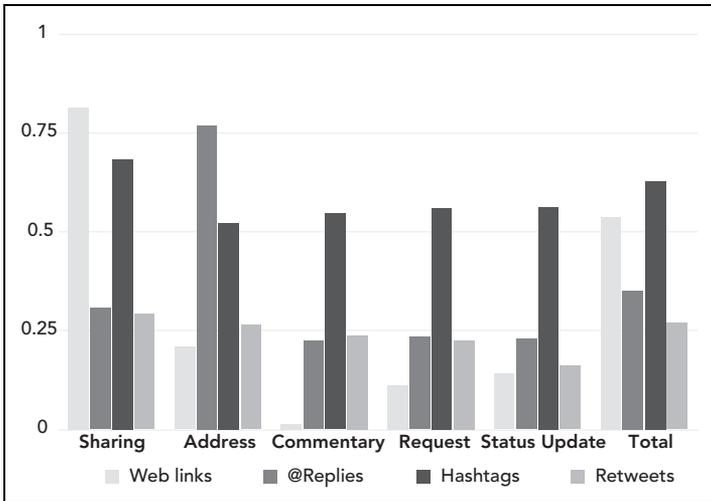
**High Frequency of Hashtag Use.** The most surprising feature of my structural analysis of the exchange was that hashtags (i.e., those in addition to #healthcare, which appeared in every message) were the most common structural feature in the data, appearing in 62.8% of the tweets (see Figures 2 and 3). Other Twitter studies have not found such a high frequency of hashtag use; Kwak et al. (2010), for example, found that 31% of the trending topics in their study were hashtags whereas boyd et al. (2009) found that only 5% of general Twitter messages and 18% of retweets contained hashtags.

**Focus on Sharing.** While hashtags and Web links were the most prominent structural features found in the data, the largest single content category was sharing (see Table 4). Almost 61% of the tweets were focused on information sharing, and 81.4% of these messages contained links to external sites. This category also contained the highest frequency of messages containing hashtags (68.4%; see Table 6), a frequency slightly higher than the total frequency for the entire set (62.8%; see Table 3). This connection between sharing information and the presence of Web links and hashtags indicates that this sharing behavior could be related to the tagging behaviors prevalent in the data.

These results suggest, then, that the primary function of the #healthcare exchange was to share information through links to outside resources and personal comments or observations. Even though the exchange contained some conversational features, response was not as crucial within this network as they were in the blogging and forum networked exchanges that



**Figure 2.** Number of structural features by content type.



**Figure 3.** Frequency of structural features by content type.

Rice (2009) examined, and the general scarcity of social markers like @replies within the exchange suggests that benefiting other users in the Twitter community may not have been a primary or even secondary focus

of participants. Yet, this sharing was dominated by the use of hashtags. In the next section, I look at some examples of hashtag use to further explain the role of these tags within the exchange.

## Discussion

The question posed by this study is How do hashtag networks, which transcend SNS and social networking behaviors within Twitter, function as networked exchanges? For example, do these networks go beyond the personal tagging of information to foster a mutual interplay of communication and ideas, or do they rely on the principle of response that Rice (2009) identified in blog exchanges? The results of this study suggest that posting commentary or responses seems to be a secondary use of this exchange. This is a similar finding to that of Small (2011), yet I suggest a different interpretation of this result. While the #healthcare exchange represents a shift from the kind of networked communities that Rice (2009) investigated, if we focus on the network-based functions of user activity in the #healthcare exchange, we can understand hashtagged exchanges in a way that is not dependent on social sharing or that does not emphasize the monologic features of individual messages but rather is directly connected to agency and power within networks. To do so, let us look more specifically at tweets in the data set, focusing on those that contain multiple hashtags.

### *Multiple Hashtag Use*

Although tagging is semantically useful in Twitter because it allows for the addition of user-created metadata in tweets limited to 140 characters, it is not clear that this motivation would entirely explain the behaviors observed in this exchange, particularly the prevalence of hashtags in sharing messages. For example, many messages have multiple hashtags—some contain nearly a dozen—and their inclusion often is not semantically meaningful. For example, consider these two tweets by user @KineticMoment<sup>5</sup>:

Joe Wilson for President 2012! #obama #pelosi #healthcare #speech #youlie #joewilson #hcr #hcrfail #takebackamerica #congress #iamthemob

@onibutterfly yet a genius. Joe Wilson for President 2012! #obama #pelosi #healthcare #speech #joewilson #hcr #congress #iamthemob

Both messages address Congressman Wilson's outburst during President Obama's speech, demonstrating the support that Wilson's actions garnered

from some conservatives. The first message contains 11 total hashtags and the second contains eight. Presumably the addition of the @reply and response to @onibutterfly made it impossible for the second post to include all of the original tags within the 140 character limit. The first message is a fairly straightforward assertion, yet it is hard to see how all these hashtags are semantically related to Wilson's outburst or the content of @Kinetic-Moment's tweet—"Joe Wilson for President 2012!" While #obama, #speech, #joewilson, and #youlie all reference the outburst, it is not clear why the author would include #pelosi, a reference to the then Speaker of the House of Representatives. Additionally, if these tags simply served semantic purposes, the inclusion of #hcr (health care reform) would be redundant, serving the same purpose as #healthcare. The second message clearly responds to @onibutterfly's tweet (which is not in the data set), but it is also not clear how the numerous hashtags in the message relate to that purpose. In short, in these messages, as in many others in the data set, multiple hashtags appeared, and their use seemed to indicate something beyond semantic categorization.

Consider the tag #tcot used in this message by @resistance09:

www.freeourhealthcarenow.com #tcot #healthcare #BlogTalkRadio #tlot  
#CzarsResign #MarkLloydResign #CassSunsteinResign #ocra #hc09  
#iamthemob

The tag #tcot (an acronym for top conservatives on Twitter), like the #pelosi tag in the previous example, does not provide any apparent meaning or metainformation about the content of the tweet. Messages that include this tag rarely make significant reference to the meaning of the acronym; yet, unlike #pelosi, #tcot serves as the organizing feature of a conservative community on Twitter. This community is effectively open because some messages are written by nonconservative users such as this one by @ProgressivePam:

If you claim to be a compassionate conservative and you're against #health-care reform you're a walking talking contradiction. #hcr #p2#tcot

In addition to #tcot and the tags indicating that this message is part of the #healthcare debate, this message contains #p2, a shortened form of progressives 2.0, which serves a similar purpose to that of #tcot (although it is used less frequently), a purpose that does not entail adding semantic information to the post. Similarly, while the author uses #healthcare semantically within

a sentence—most likely to save characters—the presence of both it and #hcr suggests that the two serve dual purposes. One of these tags would be sufficient to classify the tweet as being related to the health care debate. In short, rather than simply or exclusively indicating the topic of messages, these hashtags seem to connect those messages to other networked exchanges such as #tcot or #hcr. Within the #healthcare network, this particular behavior is highly prevalent. Yet the question remains, How can we describe such nonsemantic tagging? These nonsemantic uses of hashtags provide a key for understanding the networked functions of hashtagged exchanges, functions that extend beyond those associated with SNSs or social networking. As other researchers have indicated, such tagging in networked exchanges can be related to attempts to build shared information or language resources (cf. Lindgren & Lundström, 2011). Although such resource building can take the form of community and social relations—indeed, uses of the #tcot tag in this data set indicate the existence of a community surrounding that tag—such communities are not a given and, as such, are a reductive way of understanding both what hashtags do and the range of behaviors that they support. The inclusion of #tcot or #healthcare and #hcr or #pelosi in these examples is less like the Web 2.0 model of tagging—crowdsourced folksonomies for organizing information—that Golder and Huberman (2006) and Stolley (2009) identified; rather, it is an expression of a form of power related to networks: switching.

### Switching

Castells (2009a) defined *switching*, or making connections between networks, as a network activity that allows for individuals or actor networks to leverage the resources of other networks. He argued that switching represents one of the primary applications of power within networks and that mastering this skill is a crucial means of influencing networks (p. 423). In chronicling the rise of the network society, Castells (2000) argued that networks are not unique to digital computing, having existed for as long as people have lived together in groups (p. xviii). Rather, predigital networks were inefficient compared to hierarchical control structures. Digital computing has made network structures much more efficient by managing their complexity, thus enabling new forms of network power, such as switching and its counterpart programming, to challenge hierarchical power (Castells, 2009a, p. 23). Digital computing did not simply result in the appearance of virtual communities; it resulted in the formation of resistance groups such as the Zapatistas, who use modern communication technology to organize themselves in a decentralized, networked fashion (Castells,

2009b, p. 82). According to Castells, power within these networks functions differently from how it functions within hierarchies. In the latter, power is exercised by controlling the upper regions of the hierarchical structure. Networks lack such structure. Although an actor could control influential hubs within a network, a fundamental feature of networks is their ability to form and reform connections in multiple directions via multiple paths, thus working around influential or broken hubs if necessary. In light of this, Castells (2009a) argued that the power of switching in networked structures does not reside in controlling various loci within the structure; it resides in being able to efficiently connect and reconnect nodes in the network in order to respond to either outside influences or internal goals (pp. 20-21).

In the previous message by @resistance09, the connection between the shared resource—[www.freeourhealthcarenow.com](http://www.freeourhealthcarenow.com)—and tags like #healthcare and #hc09 is clear, but it is less clear how this site is related to the tag #MarkLloydResign, which appears to be a reference to Mark Lloyd, Chief Diversity Officer of the Federal Communications Commission (“Mark Lloyd,” n.d.). This tag use is difficult to explain as semantic; however, it is more intelligible as an attempt to connect a resource with multiple networked exchanges. Here, @resistance09 appears to be connecting the movement to challenge Democratic health care reform with the conservative backlash against President Obama’s establishment of czars within his administration. Perhaps the most highly developed example of this type of switching is the use of #cot. Hashtagged exchanges such as #cot are continually updating networks—including shared resources and conversations—that other, contextual hashtags would not necessarily have. That is, when users tag a tweet #cot, they are establishing a connection between the tweet—and their own social network—and that network. In this light, @resistance09 appears to be attempting to connect [www.freeourhealthcarenow.com](http://www.freeourhealthcarenow.com) with the other exchanges represented by the various hashtags in the tweet, and the high incidence of hashtag use in the data set indicates that this switching behavior was one of the primary functions of the exchange.

When viewing the data set from the perspective of network power, we can see other evidences of switching. Shared resources, and even the spam tweets that appeared in the data, are manifestations of switching behavior, attempting to connect the network represented by the #healthcare exchange to outside media networks or Web sites. Indeed, evidence of switching behaviors extends beyond the #healthcare exchange, being apparent in other aspects of the health care debate. It is significant that the process of engaging multiple actors with different ideological backgrounds to achieve a shared goal that is evident in the #healthcare exchange was mirrored in the

White House and Democratic leaders' approach to passing health care reform legislation. Much attention has been devoted to how the Obama campaign used networked structures such as social media to pursue the presidency (cf. Castells, 2009a, p. 364 ff.), but the way in which the administration employed network tactics to ensure the passage of a health care reform bill has received less attention. Although it may seem obvious that the #healthcare exchange was networked, evidences of networked power appear both in the administration's strategy and in responses like those of citizens at the health care town halls (cf. Spinuzzi, 2009a). Both were attempts to make connections between different ideological factions in order to achieve a particular goal: on one hand, passing health care reform and, on the other, preventing that reform. Falsehoods and poor argumentation are worthy of criticism, but the larger discussion of "civility and decorum" ("Health Care Reform," 2010) surrounding the health care debate—while important—obscured the extent to which that debate relied on techniques of networked power such as switching, both online and off.

In sum, the final bill was developed through a process of switching that engaged various stakeholders, from lawmakers, to voters, to representatives of the health care industry, in the debate about the bill ("Health Care Reform," 2010; Skocpol & Williamson, 2010). While the #healthcare exchange was only a part of this wide-ranging debate, it is in some ways a microcosm of that debate, providing researchers with insights on the workings of such exchanges as well as on wider applications of network power.

### *Networks, Switching, and Professional Communication*

What, then, is the significance of recasting the role of professional communicators from that of providers of crowdsourced data in a Web 2.0 structure to that of participants in networked exchanges in which they can practice forms of networked power? First, they would operate in the fashion of professional communicators described by Stolley (2009), managing their communication environment through the use of networked tools for "sophisticated customizations and mashups" (p. 352). The use of tools such as Twitter not only allows for sophisticated responses like these within the professional communication work environment, but it also enables professional communicators to leverage the power of networks both within and outside the workplace. As such, these tools represent an alternative to social media as a means of managing information. Finally, although user response plays a role in networked exchanges on Twitter and other networked communication, this response is a subset of behaviors that exist on these

exchanges and is dependent on forms of switching. Casting professional communicators as switchers acknowledges the extent to which these workers engage various information sources by navigating multiple networked exchanges related to professional communication, networking, or sharing discipline-based knowledge (Ross et al., 2011). Indeed, there is already evidence that professional communicators leverage exchanges such as Twitter-based hashtags for information purposes, such as by following—and participating in—hashtagged exchanges from professional conferences they are not attending (cf. Ross et al., 2011, pp. 229, 231).

## Conclusion

We are accustomed to thinking of networks through the lenses of social networking and, more recently, SNSs because such networks constitute the bulk of our networked interactions. Yet digital networking makes possible other forms of networked connection as well. This study has examined the networked exchange surrounding the use of the #healthcare hashtag on Twitter and found that one of the primary uses of the exchange was to share resources with multiple hashtag networks, connecting them through the process of switching. That is, the #healthcare hashtag—like the other hashtags found in the data—was used to connect messages in the exchange with other networks within Twitter that were not necessarily connected in other ways, such as through the site's SNS features. I am not suggesting here that SNSs or social networking are not important features of networked exchanges. These findings do not minimize these forms of social connection, but, by emphasizing the network features of this exchange, they help us to better understand how communities like #tcot operate in conjunction with exchanges such as #healthcare. Such exchanges are not easily categorizable, and examining the operation of these exchanges can help us better understand the multiple purposes involved in their use.

I suggest, then, that an effective way to address the role of users in this environment would be to recast their actions as expressions of network power. Doing so would allow for a more sophisticated understanding of professional communication within networked exchanges. I also suggest that what may seem like a failed community (Small, 2011) or like monologues that fail to develop into conversation (Ross et al., 2011) can be better understood as attempts to make connections between networks. Such an understanding could serve to expand our knowledge not only of the collaboration practices of professional communicators, including their social behaviors, but of the networks that support these behaviors and the forms

of network power—such as switching—that operate within them. This study shows that because switching behaviors occurred both in this exchange and in other, less obviously networked parts of the health care debate, an understanding of the effects and the pervasiveness of switching is important to communication researchers.

Like @replies and retweets, hashtags are a means of managing information flow within Twitter, but not in the sense that users are attempting to categorize data for later retrieval as they might in other tagging environments (cf. Golder & Huberman, 2006). Rather, this tagging serves to draw the attention of other users to a particular message within the wider network. A hashtagged exchange is more outwardly focused and displays different conversational features than do the social networks created around a user's personal profile on Twitter (Lindgren & Lundström, 2011; Papacharissi & de Fatima Oliveira, 2012; Ross, et al., 2011; Small, 2011). Hashtag exchanges, then, are a means for individual users to take part in the design and management of their communication environment within Twitter (Stolley, 2009) by choosing what messages to follow and which exchanges they wish to interact with within the site's larger "social awareness stream" (Papacharissi & de Fatima Oliveira, 2012, p. 268). In this sense, digital networks created around hashtags are perhaps a more direct expression of digital, networked writing than are networks created around SNSs or social networking.

This study has identified switching behaviors within hashtagged exchanges; however, because the data were restricted to a single exchange (as has been the case with most studies of hashtag use), the results do not show whether individual attempts at switching were effective. Because this study shows that switching appears prevalent within these exchanges, further research is necessary on the part of professional communicators to identify examples of effective switching. Additionally, they should examine the roles that switching and other forms of network power play in the development of communities such as #tcot, as well as understanding why other exchanges, such as #healthcare, do not develop into such communities. Such questions could be answered by studies that examine multiple hashtagged exchanges (or other networked exchanges) and the connections between them. These studies would likely need to combine both network and textual analysis, the former to identify where effective switching has occurred and the latter to understand the rhetorical features of these effective switching behaviors. Because digital networks are increasingly becoming part of professional communication practices, such a sophisticated understanding of switching practices is needed to account for the full use of these networks by knowledge workers.

## Acknowledgment

I would like to thank Clay Spinuzzi and the *JBTC* reviewers for their feedback and revision suggestions for this article.

## Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author received no financial support for the research, authorship, and/or publication of this article.

## Notes

1. Unless otherwise noted, the *New York Times* ("Health Care Reform," 2010) is my source for details in the description of the health care debate in this section.
2. During the manual coding process, I discovered some links that did not include <http://> (e.g., [www.house.gov](http://www.house.gov)) and some messages that contained @ that were not @replies (e.g., those that contained e-mail addresses) and adjusted my coding results accordingly.
3. I arrived at these numbers by subtracting the percentage of retweets from the percentage of @replies.
4. According to the method just described, the actual result was  $-1.4\%$ . Clearly, the number of these messages was not actually negative; rather, the automatic coding checked only for messages containing RT, retweet, or via, and users could include this text and a username without properly using the @user construction. Thus, such messages would be coded as retweets but would not be coded as @replies.
5. In this analysis, I refer to Twitter users using the construction @username, reproducing the username as it appears in the data set.

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