Off the wall political discourse: Facebook use in the 2008 U.S. presidential election

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Abstract. Both candidates and voters have increased their use of the Internet for political campaigns. Candidates have adopted many internet tools, including social networking websites, for the purposes of communicating with constituents and voters, collecting donations, fostering community, and organizing events. On the other side, voters have adopted Internet tools such as blogs and social networking sites to relate to candidates, engage in political dialogue, pursue activist causes, and share information. In this paper we examine two years of posts on the Facebook walls of the three major contenders for the U.S. Presidency in 2008: Barack Obama, Hillary Clinton, and John McCain. We analyze participation patterns of usage along dimensions of breadth and frequency, and interpret them in terms of the concept of the "public sphere".

Keywords: Digital government, social networking, e-participation, e-citizenship

1. Introduction

Informed discourse is central to democratic government. Theories of deliberative democracy posit that informed argument and rhetoric will lead to rational decision making [3,5,9,11,12,15,36]. Alternatively, some "social choice" theorists suggest that such unfettered discourse is often a source of disequilibrium and may, in the end, result in confused and chaotic decision making and irrational outcomes [1,26,36]. Van Mill [36] argues that these two positions differ only in terms of their outcomes (e.g. voting), but that the deliberative process involved in both is the same. In this article, we examine the extent of discourse in the comment areas of the Facebook social networking sites (SNSs) of the major U.S. Presidential candidates in 2008 on the assumption that SNSs are a contemporary form of Habermas' public sphere [6, 7,14–16], and that they will become increasingly important for the exercise of deliberative democracy.

1.1. The internet and U.S. politics

The Internet has clearly taken a significant new position in politics after the 2008 U.S. election. All U.S. Presidential candidates, virtually all candidates for national offices, and most candidates for state-level offices used the Internet extensively as part of their campaigns [13]. U.S. President Obama's campaign was widely recognized as a leading innovator in the use of information and communication technologies

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Fig. 1. Montage of snips from www.barackobama.com during the 2008 election season.

(ICTs). Figure 1 shows a montage of snippets from www.barackobama.com taken during the campaign season showing the range of ICTs with which the campaign was involved. Central to the Obama Internet effort was the extensive use of social networking systems (SNSs) such as Facebook to involve users in ongoing two-way interactions with the campaign, to enable and encourage users to form online political coteries among themselves, to facilitate "micro-payments" in the form of campaign contributions, and to support personalized environments (e.g. "my.barackobama.com") that may engender a stronger sense of participation and ownership.

The Presidential candidates were not alone in their use of SNS. Almost one third of U.S. Senate candidates and one in ten U.S. House candidates in 2006 updated their Facebook pages [42]. Candidates were more likely to update their Facebook profiles when they were in competitive races, and interestingly, their Facebook support was correlated with their final vote share [42,43].

From the voter standpoint, use of the Internet to obtain information about candidates for public office has grown consistently over the last three election cycles. Forty percent of all Americans (regular and non-regular Internet users alike) used the Internet to get news about the 2008 campaign [31]. Usage patterns among demographic groups changed very dramatically from 2004 to 2008, with some "digital divide" issues disappearing completely and others becoming more pronounced. Significant discrepancies in Internet usage have been persistent in the areas of race, age, gender, and education [4,23–26,35,41], however in a recent study Smith & Raine [31] found that the percentages of white (non-Hispanic), black (non-Hispanic) and Hispanic Americans using the Internet to get political news were essentially the same, with a dramatic increase of 21% for black Americans as compared to 8% for white (non-Hispanic) Americans and 12% for Hispanic Americans. Their study also showed less of a gender gap than previous studies when the definition of "Internet use" was widened to include e-mail and text messaging, however Internet use remained higher for young (18–29) and middle-aged Americans (30–49) than for Americans over 50, and this gap widened from 2004 to 2008. In their data, Internet use for political news and

information increased with education and with household income in both 2004 and 2008. As computing equipment and networking infrastructure have become more ubiquitous and less costly, researchers have begun to postulate that discrepancies in internet use may be due largely to skill gaps and not to access inequities [9,23,35].

Prior research has explicated the role of social networks in shaping and influencing political processes [2,15,19,21]. Early research on networked groups has characterized the similarities of computer networks to traditional social networks [37]. Implications for politics online have also been explored and discussed [32–34].

1.2. Social networking systems and the public sphere

SNSs such as Facebook and MySpace are very new and little research is available on their use in democratic discourse. Political candidates have populated these social sites in earnest and utilize many of their tools for collecting funds, disseminating messages, creating groups, and initiating collective activities. Many researchers have focused on the creation and maintenance of "social capital" in social networking environments and have noted that social networks tend to be homophilic (connecting people who are alike) [22]. Early research [20] suggests that Facebook users tend not to meet new people online, but rather use the social networking tool to augment existing relationships. Emerging research results show the political impact of online social networking sites such as Facebook and MySpace [33,42, 43]. Comparing the Facebook presence and participation of candidates in the 2006 and 2008 elections, Williams and Gulati [42] found that "in 2006, the candidates' Facebook support had a significant effect on their final vote shares, particularly in the case of open-seat candidates." Williams and Gulati [42] conclude that "whether the number of Facebook supporters is a campaign resource or a distinctive indicator of a campaign dynamic other measures are missing, it does matter now, particularly for the youngest age cohort, which in 2008 shows signs of upending historical patterns and conventional wisdom about its political participation."

We propose that SNSs are a form of online "public sphere" that meet more of the requirements for successful democratic deliberation [6,7,11,12,36] than other types of online forums. Habermas [17] defines "public sphere" as "a domain of our social life in which such a thing as public opinion can be formed" (p. 398). Habermas conceptualizes the public sphere as a mediating space between the state and the civil society. A public sphere is a democratic space where public interests, opinions, agendas and problems are formed, transformed, and exchanged by citizens' proactive participation. The relationship between citizens engaged in public discourse and communication is the critical feature of a public sphere. Critical rationality, equality, freedom of expression, and dissemination are the necessary conditions for the proper structuring and sustainable functioning of a Habermasian public sphere.

Habermas derived the notion of public spheres from a study of English salons, French cafes, and German table corners in Western Europe and with an explicit focus on print media. In a Habermasian public sphere, communicative action based on equality in the communication process is a prerequisite. This prerequisite of equality depends on the participation and representation of multiple interests and perspectives in public discourses in egalitarian and multicultural societies (see [37]). This point comes into sharp relief when we consider civic participation and democratic deliberation in the Internet age. Digital divide and digital literacy are significant factors in determining access to and engagement in online public spheres and discussion forums.

Extending the discussion of public sphere characteristics of political blogs and other types of online discussion forums [6,7,28,37], SNSs such as Facebook enable a variety of sociological functions. SNSs

Table 1
Public sphere characteristics of facebook in particular and social networking sites in general

Sociological Functions	Dissemination
	Opinion
	Activism
	Advocacy
	Social Relations (weak & strong ties)
Technological Features	List of Friends
	Linear Threaded Discussion Forum (Wall)
	Threaded Discussion Forums
	Status Updates
	News Postings
	Information Sharing (links, photos, videos)
	User Comments
	Groups
	Affiliations
	Unmoderated vs. Moderated
	Open Door vs. Registration
Public Sphere Characteristics	Freedom of Expression
	Participation
	Interaction
	Rationality
	Emotionality
	Authority

enable the dissemination of private opinion and through their distribution and consumption facilitate the formation of (online) public opinion via user participation and interaction. With respect to the Facebook walls of political candidates, these sociological functions are always already political in nature. If the public sphere provides an intermediate space between the state and civil society for the dissemination, discussion, and deliberation of issues and enables communicative action grounded in equality and rationality, then with the qualifying caveats of digital divide and digital literacy, new media such as SNSs can provide such an intermediary deliberative space. Table 1 lists the public sphere characteristics of Facebook in particular and SNSs in general.

Many political theorists such as White [40], Fiskin [11,12], and Dahlberg [6,7], often following Habermas [16–18], have all proposed criteria by which the effectiveness of political dialog might be judged. According to White [41], effective political deliberation occurs when:

- Each person is allowed to participate in discourse.
- Each may question any proposal.
- Each may introduce any proposal.
- Each is allowed to express attitudes, wishes, and needs.
- There is universality on agreement concerning outcomes.

Fishkin [11,12] stresses that deliberative democracy is most likely to result in learning and enlightened decision making when:

- There is equity in opportunity to participate and be heard.
- Views expressed reflect a diversity of interests.
- Participants treat each other with mutual respect.

Dahlberg [6,7] provides a set of "requirements" for online political discourse if it is to meet Habermas' concept of the public sphere, specifically (from [7, p. 623]):

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

Dahlberg finds that online forums of various types meet the first requirement, but often fall short on the remaining ones. SNSs are different from many other online forums in important ways relative to these requirements. First, at the core of SNSs are friend networks, which means that participants are not masquerading in alternative identities but are presenting themselves as they wish to be seen by their friends, in other words they are presenting a persona in a manner that is more consistent with their offline ("real") life. Since participants' activities can be seen by their friends (in fact, activities in Facebook are broadcast to friends), they are more likely to reflect real interests and opinions (sincerity), and they are open to challenge. Finally, anyone may post on a candidate's Facebook site (at least this is how most candidates set up their SNSs, and how all of the candidates in this study set them up), and therefore there are no barriers to inclusion beyond the normal social pressures that might come from one's social network. Domination of the discussion is not an issue since there are no temporal or spatial constraints on participation that would result in one participant's voice drowning out others' voices.

1.3. The Presidential Candidates' Facebook Walls

The use of Facebook and other SNSs by candidates and voters allows researchers an unprecedented opportunity to observe retrospectively and unobtrusively political conversation as it unfolded. In this paper, we present preliminary observations of online political discourse in a social networking environment by examining the pattern of posts on U.S. Presidential candidates' Facebook "walls." Walls are essentially unthreaded public forums within the Facebook environment on which registered users may post their thoughts. A clip of John McCain's wall (with user images and names obscured) is shown in Fig. 2. Posters are identified by name, image (if provided in the user's profile), and regional network. Because Facebook is intended to connect people who know each other, these identifying features are typically true. Other information about posters might be available depending on individual settings.

In this paper, we report information about the distribution of postings over a two-year span on the walls of the three major candidates for U.S. President in 2008: Barack Obama, Hillary Clinton, and John McCain. Our initial goal is to understand the pattern of postings across walls and the behavior of posters in terms of (a) degree of engagement, (b) connectivity to assets outside of Facebook, (c) individual versus group reference, and (d) frequency and persistence of activity. In this paper we will not attempt to characterize the semantic content of posts or their interactional sequence beyond these issues.

Our experiment is not hypothesis driven per se, but the data addresses several research questions:

1. How persistent are Facebook posters in the context of political walls? We gauge this in terms of *frequency of posts* and *duration of participation*.
2. How broad are Facebook posters in terms of their interest in multiple candidates or assets outside of the Facebook environment? We gauge this in terms of the *amount of cross-posting among different walls* and the *number of hypertext links included in posts*.
3. Are Facebook posters talking about themselves or others? We gauge this by looking at *characteristics of pronouns used* and *direct references to candidates*.
4. To what degree is SNS participation an activity consistent with Habermas concept of "public sphere." We use *participation patterns* and some *content analysis* to address this question.

Fig. 2. A screenshot of part of Senator John McCain's Facebook wall during the 2008 election season.

2. Method and data set

We examined the wall posts from the Facebook sites of U.S. Presidential candidates Barack Obama, Hillary Clinton, and John McCain from September 1, 2006-September 30, 2008. In this time period, a total of 76,045 individuals created 687,626 postings on the three walls.

Participation on the three walls was not equal, with Obama's wall containing 324,780 postings (47.2%), Clinton's wall containing 316,330 postings (46%), and McCain's wall containing 46,516 postings (6.8%).

The average number of posts per individual was 9.04, however this number is misleading because the distribution was highly skewed. The lower bound for posts was 1, and 55,666 individuals (73.2%) posted only once. *Unary* posters posed several problems for our analyses since they loaded certain conditions with many small numbers by definition (e.g. all unary posters had to be in a one-wall group, all unary posters had a participation span of 0 days, etc.). Also, we considered unary posters to be qualitatively different than posters who came back to participate in the political dialogue. Although we consider the finding that only 26.8% of individuals returned to the candidates' walls an important empirical observation (which we will discuss below), we were primarily interested in discourse participants. Therefore, in subsequent analyses we eliminated all unary posters from the analysis. At the other end of the distribution, there was a scattering of posts in the thousands. Cutting the tail of the distribution at a mean of 125 posts eliminated 1% of the individuals at this end, shortened the tail considerably, and likely eliminated mostly spammers or automated posters. These data manipulations left 19,652 individuals in our data set which we felt represented true participants in political dialog. Our trimmed data set had a mean number of postings per individual of 14.5.

3. Results

3.1. Wall crossing

The walls were open for postings from any Facebook member, so individuals could post on multiple walls. Posters are uniquely identified in Facebook, so it was possible to determine whether individuals posted on more than one candidate's wall. Figure 3 shows the numbers of individuals who posted to one candidate's wall (88.7% in total), to the walls of two candidates (10.5%), and to the walls of all three candidates (0.8%). The largest number of people (59.7%) were participating in the Obama conversation only, the next largest (18%) in the Clinton conversation only, and the next largest (11%) in the McCain conversation only. Of those engaged in two walls, the largest number (6.9%) was interested in the Obama and Clinton combination. A smaller percentage of individuals (4.4%) crossed the partisan barrier to post on both McCain's wall and one or both of the Democratic challengers. The seven possible wall posting contexts depicted in Fig. 3 were used to form three groups making up the *Wall Crossing* independent variable in several of the analyses to follow. We contrasted posters to a single wall (Obama, Clinton, or McCain), to two walls (Obama+Clinton, Obama+McCain, or Clinton+Mcain), and to all three walls (Obama+Clinton+McCain).

3.1.1. Engagement

We examined the *average number of posts per person* for individuals posting in each of the three Wall Crossing conditions (Fig. 4). The more walls people posted on, the more they tended to post. The mean numbers of posts in the one-wall, two-wall and three-wall conditions were 6.46, 13.24, and 19.95
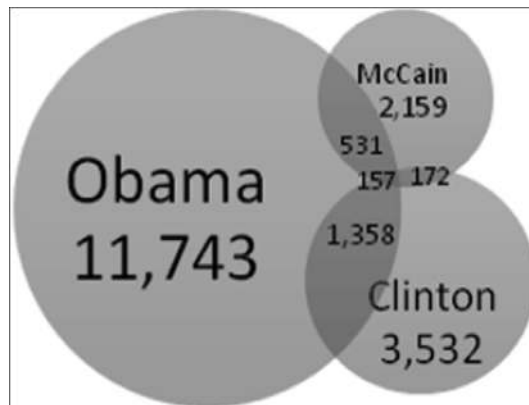
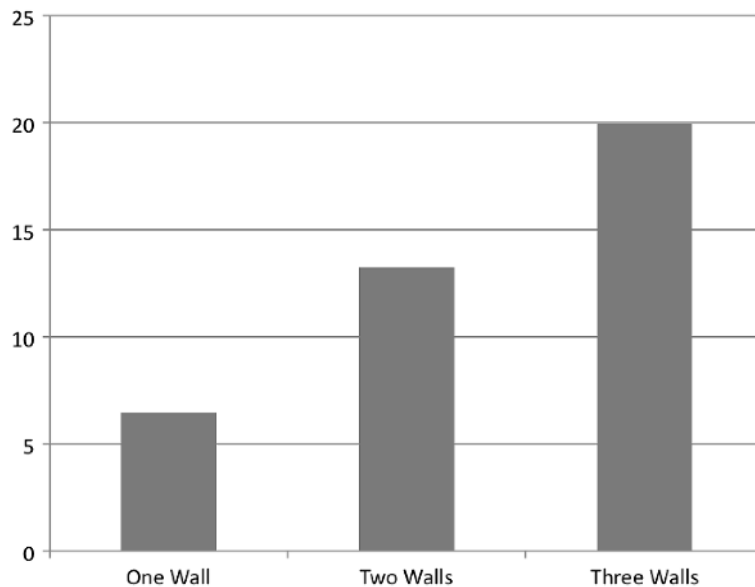Fig. 3. Number of wall posters who commented on each candidate's wall and across walls (areas approximated).

Fig. 4. Average number of posts per poster in the three Wall Crossing conditions.

respectively, $F(2,19649) = 270.34$, $p < 0.0001$, MSE $= 203.85$. A Tukey HSD post-hoc test at $p < 0.05$ showed significant differences between all pairs of means.

We examined the *average number of words per person* for individuals posting in each of the three Wall Crossing conditions (Fig. 5). The more walls people posted on, the more verbose they were with the mean numbers of words per poster being 225.84, 474.26, and 783.31 in the one-wall, two-wall and three-wall conditions respectively, $F(2,19649) = 248.58$, $p < 0.0001$, MSE $= 317198.86$. A Tukey HSD post-hoc test at $p < 0.05$ showed significant differences between all pairs of means.

We examined *the average length of time* (*in days*) between the first and last posting for each poster in each of the three Wall Crossing conditions (Fig. 6). People who posted on only one wall had a shorter participation span (67.01 days) than people posing on two walls (116.28 days) or three walls (97.36). The overall ANOVA showed significant differences, $F(2,19649) = 184.49$, $p < 0.0001$, MSE $= 12394.78$.
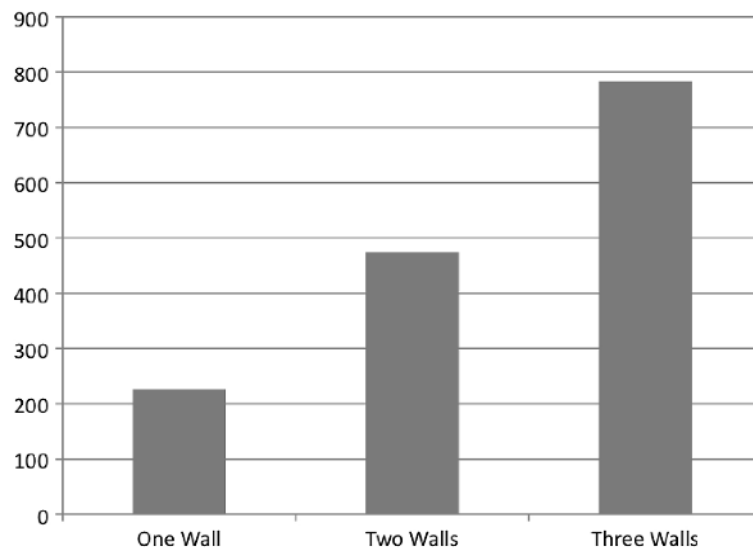
Fig. 5. Average number of words per poster in the three Wall Crossing conditions.
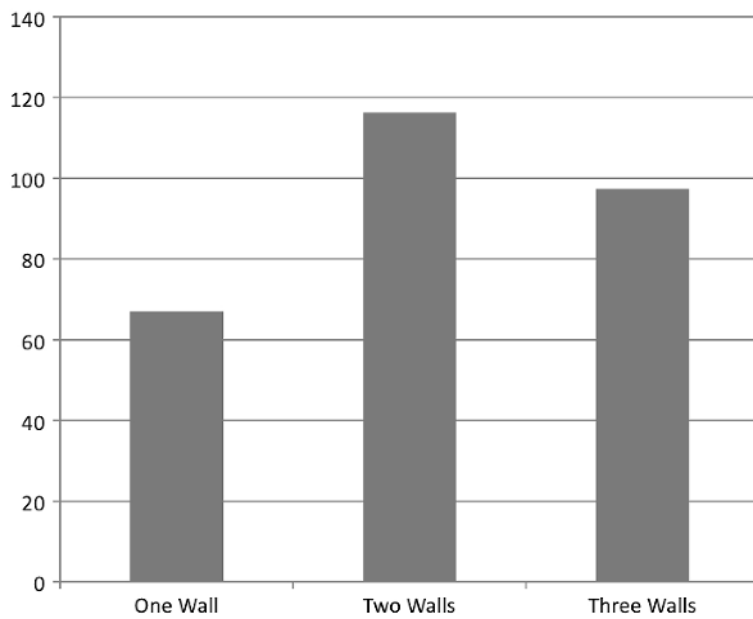

Fig. 6. Average number of days between first and last posts per poster in the three Wall Crossing conditions.

A Tukey HSD post-hoc test at $p < 0.05$ showed that the one-wall participation mean was smaller than the two-wall and three-wall means, but that the two-wall and three wall conditions did not differ from each other.

3.1.2. Connecting to the outside

We examined the *average number of links* (found by matching the pattern "http" without regard to capitalization) that each poster included across all of their posts (Fig. 7) and the *average number of links*
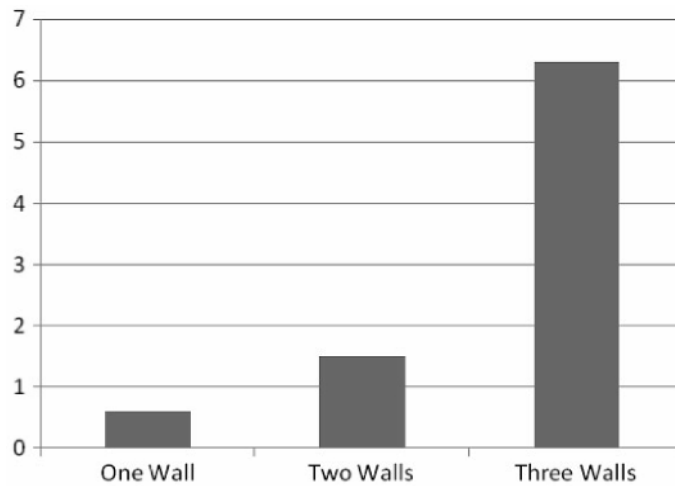
Fig. 7. Average number of links per poster in the three Wall Crossing conditions.
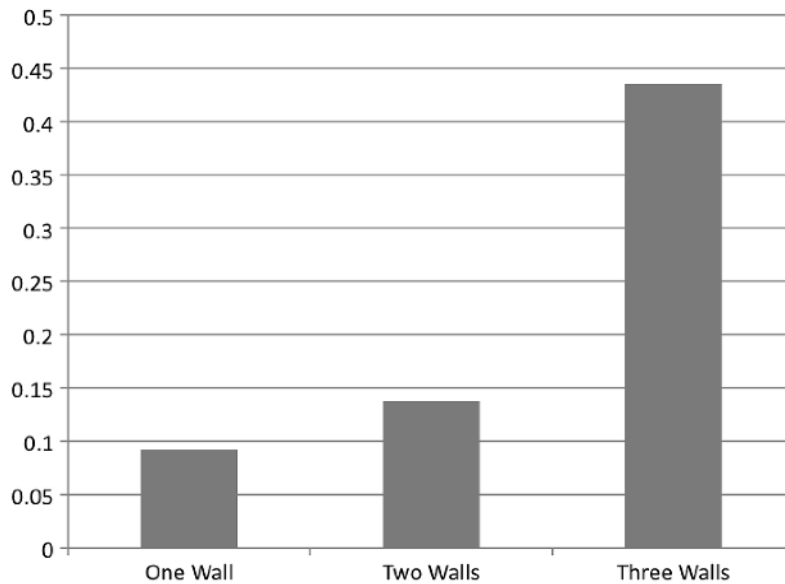

Fig. 8. Average number of links per poster per post in the three Wall Crossing conditions.

per post per person (found by dividing the number of links by the number of posts) in each of the three Wall Crossing conditions (Fig. 8).

For both dependent measures, the number of links increased dramatically as the amount of cross-wall posting increased. The mean numbers of links per poster were 0.61, 1.50, and 6.29 links for the one-wall, two-wall, and three-wall conditions respectively, $F(2,19649) = 211.98$, $p < 0.0001$, MSE $= 14.95$. The mean numbers of links per post per person were 0.09, 0.14, and 0.44 links for the one-wall, two-wall, and three-wall conditions respectively, $F(2,19649) = 121.03$, $p < 0.0001$, MSE $= 0.09$. For both dependent measures, Tukey HSD post-hoc tests at $p < 0.05$ showed significant differences between all pairs of means.
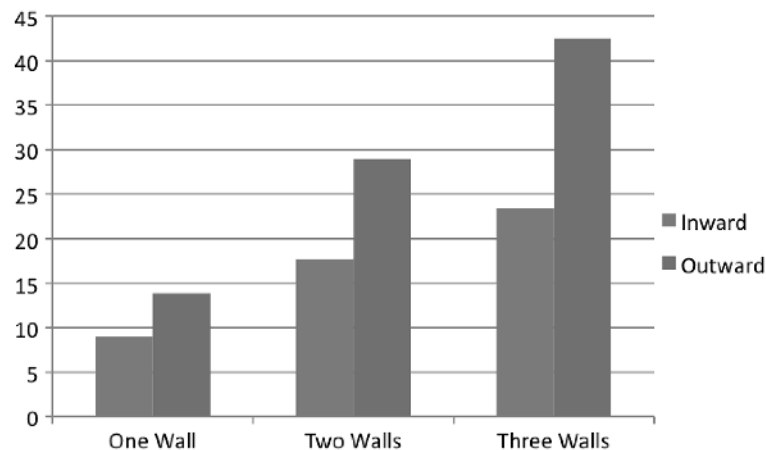
Fig. 9. Average number of inward versus outward pronouns in the three Wall Crossing conditions.

3.1.3. Pronouns

The use of pronouns in wall postings indicates to whom the poster was referring. Posters might refer to themselves (*I, me, my, mine*), to themselves as part of a group of others (*we, us, our, ours*), to other individuals (*he/she, him/her, his/hers*) or other groups (*they, them, their, theirs*), or directly to someone else (*you, your, yours*) or a group of others (also *you, your, yours*). Mixed design 2 × 3 ANOVAs were conducted with one factor being a *pronoun characteristic* (repeated measures on two levels since each individual used pronouns in all categories) and one factor being the *Wall Crossing group* (one-wall, two-wall, or three-wall).

We categorized pronouns according to their deictic direction, i.e. inward-pointing (*I, me, my, mine, we, us, our, ours*) versus outward-pointing (*he/she, him/her, his/hers, you, your, yours, they, them, their, theirs*) and identified them without regard to capitalization in the corpus of posts. Figure 9 shows the mean number of inward-facing and outward-facing pronouns used by individuals in the different Wall Crossing groups.

Posters used more pronouns the more walls they cross-posted on (11.42, 23.33, and 32.94 pronouns per poster for the one-wall, two-wall and three-wall conditions respectively), $F(2,19649) = 217.26$, $p < 0.0001$, MSE = 1497.12, but this is not a surprise in light of the finding reported earlier that multiple-wall posters tended to post more and be more verbose. Posters used more outward-pointing than inward-pointing pronouns (15.68 versus 10.00 respectively), $F(1,19649) = 424.76$, $p < 0.0001$, MSE = 211.47, but we have no baseline or control conditions to which this difference can be compared. Of greater interest was the interaction between deictic direction and number of walls. Posters diverged in the number of inward-pointing versus outward-pointing pronouns such that multiple-wall posters used a greater number of outward-pointing pronouns relative to inward-pointing pronouns, $F(2,19649) = 121.86$, $p < 0.0001$, MSE = 211.47. In other words, discourse about other people increased relative to discourse about oneself when posters were involved in multiple communities.

We also categorized pronouns according to how many people were referred to, i.e. a single individual (*I, me, my, mine, he/she, him/her, his/hers*) versus a group of people (*we, us, our, ours, they, them, their, theirs*) and identified them without regard to capitalization in the corpus of posts. For this analysis we ignored the second person pronouns (i.e. you, your, yours) since they are ambiguous for number. Figure 10 shows the mean number of individual and group pronouns used by people who posted on a single wall, two walls, or all three walls.
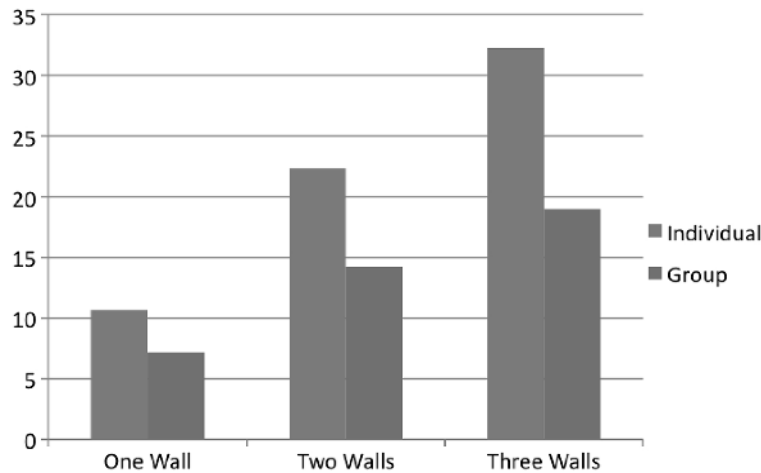
Fig. 10. Average number of individual versus group pronouns in the three Wall Crossing conditions.

Once again, posters who cross-posted on more walls used more pronouns (8.90, 18.27, and 25.59 pronouns per poster for the one-wall, two-wall and three-wall conditions respectively), $F(2,19649) = 215.28$, $p < 0.0001$, MSE $= 928.71$, and used more singular than group pronouns (12.06 versus 7.98 respectively), $F(1,19649) = 324.57$, $p < 0.0001$, MSE $= 137.72$. However, the interaction between pronoun number and number of walls was significant. Posters diverged in the number of individual versus group pronouns such that multiple-wall posters referred more to individuals relative to groups $F(1,19649) = 93.55$, $p < 0.0001$, MSE $= 137.72$. In other words, discourse about individuals increased relative to discourse about groups when posters were involved in multiple communities.

3.1.4. Direct references

We examined the *number of direct references* to candidates by matching the patterns "Obama," "Barack," "Clinton," "Hillary," "Hilary," and "McCain" without regard to capitalization. When a first and last name appeared together we counted it as one reference. We counted lone occurrences of Obama's and Clinton's first names as direct references, but we did not count "John" alone since it was not highly unique to John McCain and rarely used alone to refer to him anyway. A 3 × 3 mixed-measures ANOVA was performed with Candidate Reference as the repeated-measures factor and Wall Crossing as the independent groups factor.

Posters who did more cross posting on multiple walls also made more direct references to the candidates (1.77, 4.09, and 6.71 direct references for one-wall, two-wall and three-wall posters respectively), $F(2,19649) = 260.79$, $p < 0.0001$, MSE $= 25.61$ (Fig. 11). In all cases, Obama was referred to most frequently (an average of 5.76 times per poster), Clinton next (an average of 4.42 times per poster), and McCain next (an average of 2.41 times per poster), $F(2,39298) = 121.18$, $p < 0.0001$, MSE $= 30.61$. An interaction between the two factors showed that references to the low-referenced candidate (McCain) did not increase as dramatically as number of cross-postings increased when compared with the higher-referenced candidates, $F(4,39298) = 22.47$, $p < 0.0001$, MSE $= 30.61$. In other words, candidates with a reference advantage have a greater advantage from individuals posting on multiple walls.
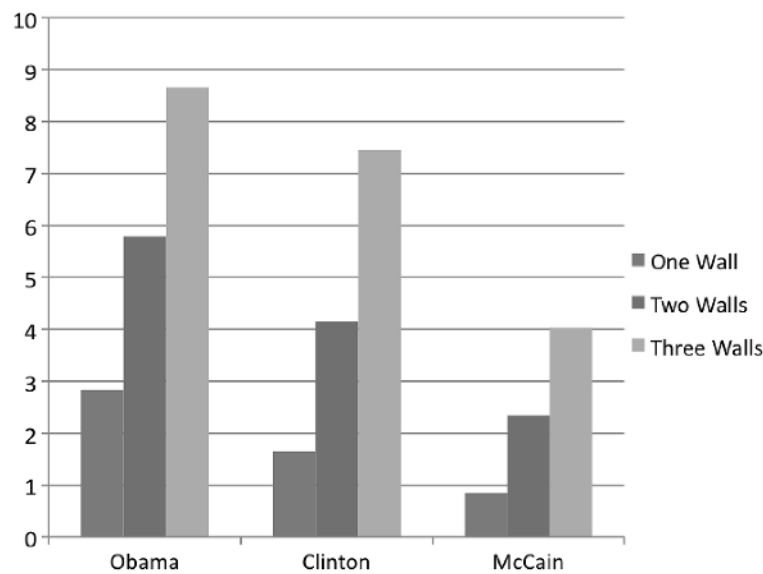
Fig. 11. Average number of direct references to candidates by name in the three Wall Crossing conditions.

3.2. Frequency of posting

We were interested in the characteristics of individuals who posted infrequently versus those who posted frequently. This measure is theoretically independent from the Wall Crossing factor since a frequent poster could stick to one wall and an individual who posted as few as three times could be in the three-wall category. We split our data set into three subsets based on *frequency of posting*:

- Low: People who posted 2–10 times ($n = 17,062$)
- Moderate: People who posted 11–100 times ($n = 2491$)
- High: People who posted 101–124 times ($n = 99$)

Since number of items in any category will be correlated with number of posts, we standardized all dependent measures reported in this section by dividing by the number of posts.

3.2.1. Engagement

Figure 12 shows the mean number of words per post in each of the posting frequency conditions. We were surprised to see a non-linear function in which verbosity increased from the low condition (34.50 words per post) to the moderate condition (36.63 words per post), but decreased again for high frequency posters (32.38 words per post), $F(2,19649) = 5.89$, $p < 0.01$, MSE $= 890.40$. Although significant, the effect amounts to only 2–4 word differences across the conditions.

Figure 13 shows the mean number of days between the first and last posts in each of the posting frequency conditions. Although it appeared that higher frequency posters tended to have longer durations (72.19 days, 73.52 days, and 85.18 days for the low, moderate, and high frequency posters respectively), this effect was not significant, $F(2,19649) < 1.0$, *ns*.

3.2.2. Connecting to the outside

Figure 14 shows the *mean number of links per poster* in each of the posting frequency conditions. There was a significant and dramatic increase in average links per poster as the posting frequency increased
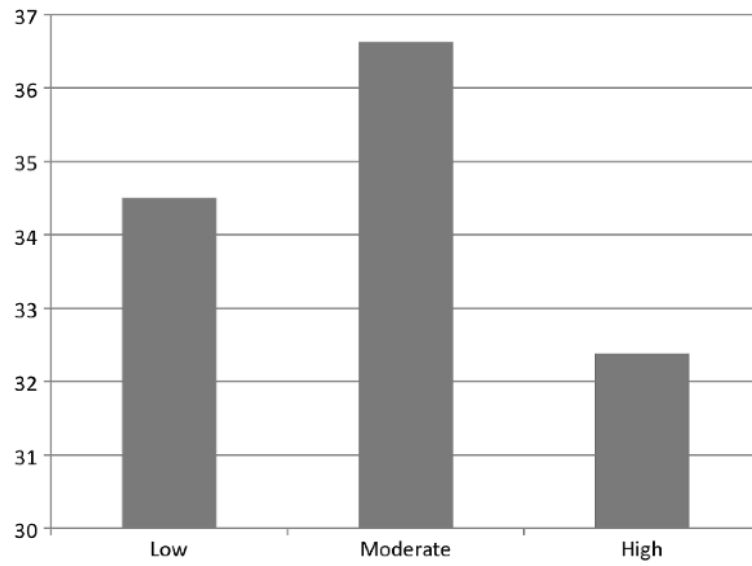
Fig. 12. Average number of words per post in the three Posting Frequency conditions.
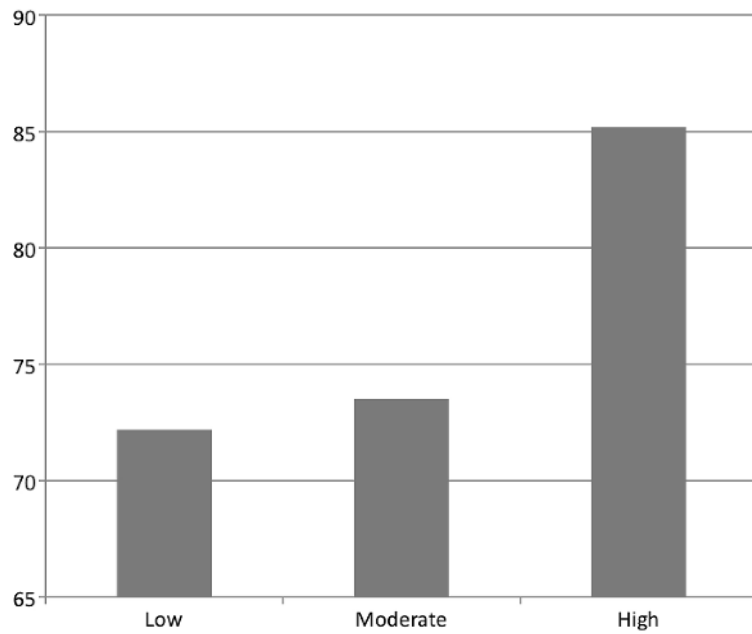

Fig. 13. Average number of days between the first and last posts in the three Posting Frequency conditions.

with the low frequency posters averaging 0.33 links, moderate frequency posters averaging 3.25 links, and high frequency posters averaging 9.42 links, $F(2,19649) = 931.92$, $p < 0.0001$, MSE = 13.95.

3.2.3. Pronouns

We again examined deictic direction and pronoun number (as defined in Section 3.1.3 above) as they differed across the three posting frequency conditions. We performed 2×3 mixed measures ANOVAs
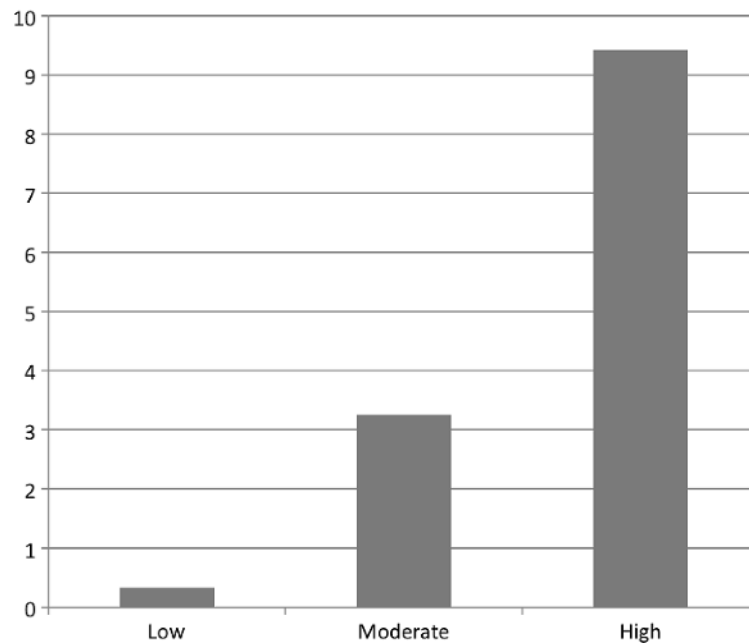
Fig. 14. Average number of links per poster in the three Posting Frequency conditions.
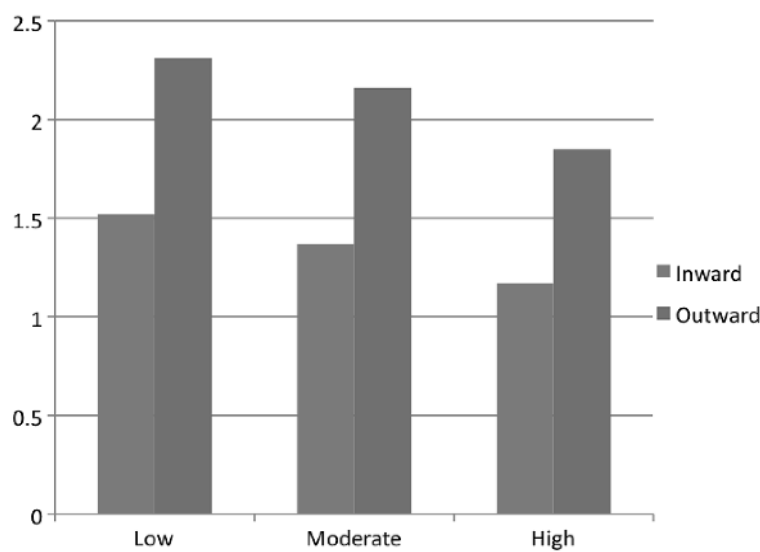

Fig. 15. Average number of inward versus outward pronouns in the three Posting Frequency conditions.

with *Pronoun Condition* being the 2-level repeated measure and *Posting Frequency* being the 3-level independent measure.

Figure 15 shows the mean number of inward-pointing versus outward-pointing pronouns per post across the three frequency conditions. In this analysis, there was no interaction between deictic direction and posting frequency. There were more outward-directed pronouns (2.11 per post) than inward-directed pronouns (1.35 per post), $F(1,19649) = 96.11$, $p < 0.0001$, MSE $= 2.51$. Of greatest interest was the
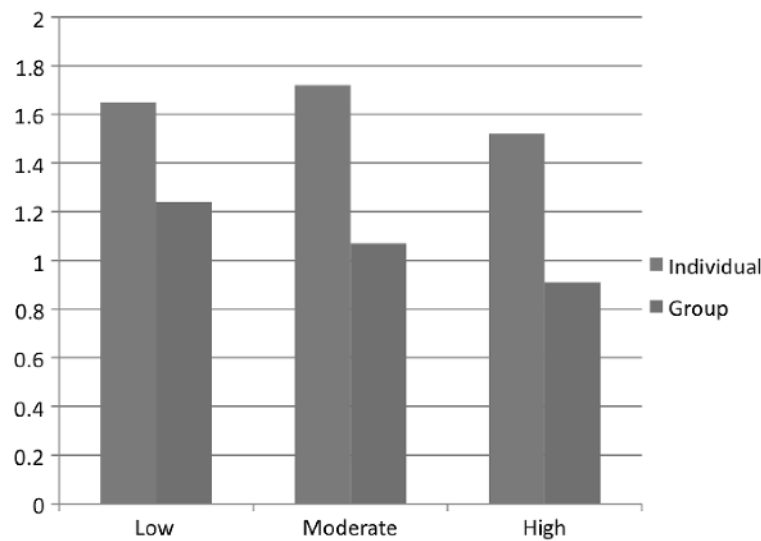
Fig. 16. Average number of individual versus group pronouns in the three Posting Frequency conditions.

fact that the number of pronouns decreased as posting frequency increased (1.91, 1.76, 1.51 pronouns per post for the low, moderate, and high frequency posters respectively), $F(2,19649) = 9.54$, $p < 0.0001$, MSE $= 6.54$.

Figure 16 shows the mean number of singular versus plural pronouns per post across the three posting frequency conditions. More singular pronouns were used than plural pronouns (1.63 per post versus 1.07 per post respectively), $F(1,19649) = 77.40$, $p < 0.0001$, MSE $= 1.71$, and the number of pronouns of this type also decreased slightly as posting frequency increased (1.44, 1.39, and 1.21 pronouns per post in the low, moderate, and high posting frequency conditions respectively), $F(2,19649) = 2.86$, $p < 0.06$, MSE $= 3.65$. The interaction was significant however, $F(2,19649) = 20.02$, $p < 0.0001$, MSE $= 1.71$, and inspection of the means suggests that the decrease in pronoun usage did not begin as soon for singular pronouns as for plural pronouns.

3.2.4. Direct references

We examined *direct references to the candidates by name* (as defined in Section 3.1.4 above) across the posting frequency conditions (Fig. 17). A 3×3 mixed measures ANOVA was performed with Candidate as the 3-level repeated measures factor and Posting Frequency as the 3-level independent groups factor. Once again, the frequency of direct reference decreased as the posting frequency increased (0.30, 0.29, and .24 direct references per post in the low, moderate, and high frequency posting conditions respectively, $F(2,19649) = 2.94$, $p < 0.05$, MSE $= 0.377$. There was a difference among the candidates, with Obama receiving the greatest number of direct references (0.43 per post), Clinton second (0.25 per post), and McCain third (0.15 per post), $F(2,39298) = 50.80$, $p < 0.0001$, MSE $= 0.328$. The interaction was significant however, $F(4,39298) = 5.40$, $p < 0.0001$, MSE $= 0.328$, and inspection of the means suggests that the more highly referenced the candidate, the more drop in reference was observed as posting frequency increased. The least referenced candidates (McCain and Clinton) were referred to directly about the same amount by posters in all frequency conditions, but the most referenced candidate (Obama) was referred to more as the frequency of posting decreased.
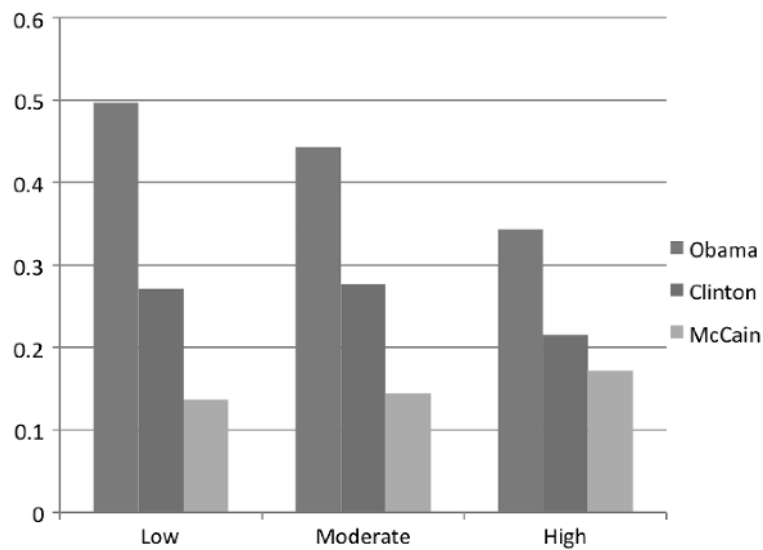
Fig. 17. Average number of direct references to candidates by name in the three Posting Frequency conditions.

3.3. Summary of results

We can summarize our findings as follows:

– In the social networking space of Facebook, a large percentage of individuals posting to the walls of the three major U.S. Presidential candidates were "one-timers," with about a quarter of the participants returning to participate more than once.
– The bulk of individuals (excluding one timers) posting to the walls of the three major U.S. Presidential spent their time and resources on a single candidate's wall.
– The participation in political dialogues was highly skewed, with one candidate (the ultimate winner) receiving the bulk of the attention.
– Some individuals posted on multiple candidates' walls. These individuals' postings were quantitatively different from the postings of individuals who stayed in the context of a single wall in the following ways:

  * Multiple wall posters tended to post more often.
  * Multiple wall posters were more verbose.
  * Multiple wall posters provided more outside links.
  * Posters to two walls were engaged for a longer time than posters to one or three walls.
  * Multiple wall posters were more outward-directed than directed toward themselves.
  * Multiple wall posters were more oriented toward individuals and less toward groups.
  * Multiple wall posters referred directly to candidates more often.
  * The discrepancy in direct reference to candidates was greater for the candidates with highest reference.

– The data set was partitioned into low, moderate, and high frequency posters (excluding "one timers" and individuals posting 125 times of more). Individuals in these three groups differed quantitatively from each other in the following ways:
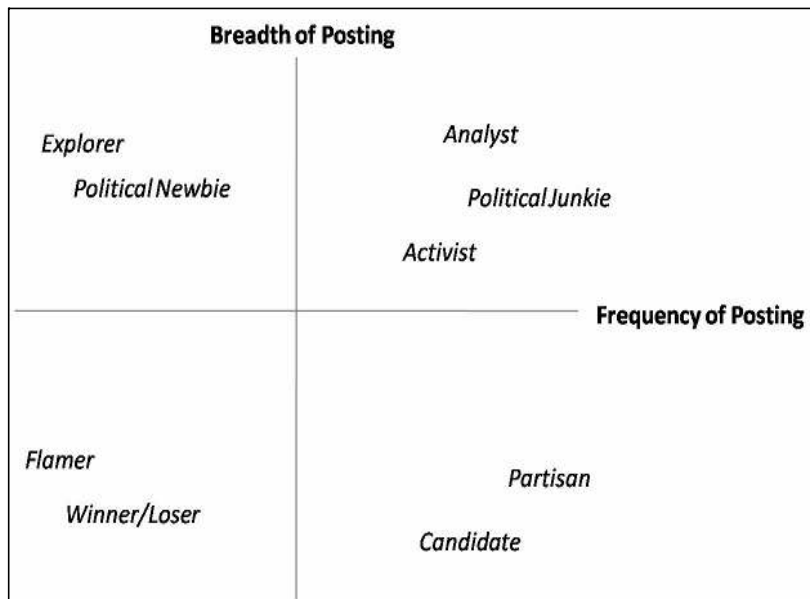
  * Most people were low frequency posters.

Fig. 18. Social networking dialog space.

* More frequent posters were more verbose, but only up to a point. High frequency posters tended to say less per post than moderate frequency posters.
* More frequent posters provided dramatically more links per post to the outside. The number of links per poster tripled for each frequency group.
* More frequent posters had greater participation duration, but the average difference between low and high frequency posters was only about two weeks.
* High frequency posters used fewer pronouns per post.
* High frequency posters used fewer direct references to candidates per post, but this trend was most apparent for the highly-referenced candidate (Obama).

4. Discussion

Individuals who chose to participate in the political dialogues taking place on the Facebook sites of the three major 2008 U.S. Presidential candidates could involve themselves as much or as little as they liked, and they could participate in one or more dialogues. We traced behaviors along these two dimensions of *intensity of engagement* and *breadth of participation*.

Participants could be assessed on their involvement both in terms of how many times they posted and how often they posted on multiple walls. These can be thought of different dimensions of social networking participation space which may be independent (see Fig. 18). We propose that frequency of posting is influenced by knowledge about and commitment to a candidate or cause whereas breadth of posting is influenced by the degree of desire to influence and understand other points of view. This analysis predicts that different types of people might be recognizable in different quadrants of the social networking participation space as shown in Fig. 18. For example, the spokesperson for a political candidate would be expected to post a moderate to high amount on their own candidate's wall, showing little breadth. A political analyst, on the other hand, would be expected to post often on multiple walls.

Someone new to political discourse might be expected to participate infrequently but in multiple places. An individual who only posts once or twice to one wall might be a person with a "rant" or a single point to make.

The two-dimensional social networking dialogue space also makes the prediction that the content of posts (i.e. the nature of the discourse) will be different in different quadrants. The next step in our research project involves careful analysis of the content of these posts.

Finally, we discuss our findings in light of requirements for public spheres as described by Dahlberg [6, 7] and productive democratic discourse as described by Fishkin [11,12] and White [40]. All of these researchers stress equity and openness of participation. Our results show a large unary posting rate, but we do not know why these individuals dropped out of the discourse nor do we have a baseline for what might be interpreted as normal for an open forum. There was no impediment to their return, and indeed many people returned often. Those participants who returned were engaged in what Dahlberg [7] calls "a commitment to an ongoing dialogue," which he takes as important evidence for the requirement of "Ideal role taking." Additionally, multiple wall posters used more outward-directed pronouns, suggesting that they were not just talking about themselves but also addressing the comments of others. We take this as evidence of an "attempt to understand the argument from the other's perspective," which Dahlberg also considers to be an important constituent of "Ideal role taking," and which we interpret as an indictor of Fishkin's "mutual respect."

People who did return to post more than once tended to be more verbose. In physical settings this would cause such participants to dominate discourse due to time limitations. However, in the asynchronous and non-temporally bounded wall-posting context of Facebook, the participation levels of posters are independent of each other to a large extent. Therefore we argue that this forum affords greater opportunities for Dahlberg's "Discursive Inclusion and Equality" and Fishkin's criterion that there be equal opportunities for participation and for all participants to be heard.

Linking to the outside was more common for frequent posters and for multiple wall posters. In related work [29,30] our research team has categorized the purposes of user-supplied embedded links and found that many links were used to provide bolstering evidence for a claim, rebut another comment, or call others to action. We argue that these types of comments are indicative of "engaging in reciprocal critique of normative positions that are provided with reasons rather than simply asserted," which is Dahlberg's explanation of the requirement for "Exchange and critique of reasoned moral-practical validity claims."

To summarize, we feel that the dialog we observed on the Facebook walls of the 2008 U.S. Presidential candidates showed evidence of several of the characteristics that scholars claim are central to the realization of a Habermasian public sphere. (Without a more qualitative analysis of the discourse content we cannot comment on Dahlberg's requirement of "reflexivity," which refers to participants' ability to "critically examine their cultural values, assumptions, and interests, as well as the larger social context"). We claim that SNSs are currently the sociotechnical environments that most closely enable public sphere discourse for those who choose to enter the online "salons" of political candidates. It remains an open question, however, whether the outcome of this dialog is informed political decision making in the form of votes.

Acknowledgement

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