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WEB 2.0 AND POLITICS: THE 2008 U.S. PRESIDENTIAL ELECTION AND AN E-POLITICS RESEARCH AGENDA[1]

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Abstract

The Internet was a major factor in the 2008 U.S. presidential campaign and has become an important tool for political communication and persuasion. Yet, information systems research is generally silent on the role of the Internet in politics. In this paper, we argue that IS is positioned to enhance understanding of the influence of the Internet on politics, and, more specifically, the process of election campaigning using Internet-based technologies such as Web 2.0. In this paper, we discuss how these technologies can change the nature of competition in politics and replace or complement traditional media. Our empirical study on how Web 2.0 technologies were used by the candidates leading up to the 2008 U.S. presidential primaries sheds light on how these technologies influenced candidate performance. Finally, we outline a research agenda highlighting where IS can contribute to the academic discourse on e-politics.

Keywords: New media, Web 2.0, politics, digital democracy, e-politics, elections, online

Introduction

Politics, and particularly elections, have become big business. This is seen most prominently in countries such as the United States, where more than $2.1 billion was spent on the 2008 presidential campaign (Mosk 2008). A recent phenomenon is the rise of the Internet as a medium for political communication. The Pew Institute reported that more than 55 pecent of the adult population in the United States got their news and information, and took part in political dialogue in the 2008

presidential elections, through the Internet.[2] In the blogosphere, 18 percent of Internet users posted to an online election forum (Smith 2009). It is no wonder that political campaigns have appropriated this channel to disseminate campaign messages. The Obama campaign's savvy use of the Internet in the 2008 elections, particularly in the Democratic primaries and caucuses, is widely cited as a factor in his success.[3] Similarly, the Internet also played a major role in Republican candidate Ron Paul's ability to raise millions despite being relatively unknown on the national stage. The widespread use of the Internet in campaigns is evident from the fact that all major candidates in the 2008 U.S. presidential elections routinely released their television ads on YouTube as well as their own websites, and they made sure they had a presence on social media sites such as MySpace and Facebook.

Politics in the United States has come a long way from the time when door to door canvassing and stump speeches were the only way to reach voters. President Harry S. Truman logged 21,928 miles in 4 months in 1948 during his famous "whistle-stop" tour, a journey that is credited with helping him to win the election (see Figure 1). Fast forwarding to 2008, the Internet space is credited with helping a first-term United States Senator win the 2008 Democratic nomination and then the presidency. Barack Obama reached out to millions of people through electronic means such as blogs and video sharing, giving voters both the ability to receive information and the opportunity to interact and get directly involved with the campaign and with each other. Examples include Barack Obama's "Get Involved" initiative on his campaign website, mybarackobama.com, and his famous blog on race relations during the 2008 campaign (see Figure 2).

Just as Weill and Vitale (2001) showed how traditional business has been migrating to e-business, many now argue that politics is in the midst of an Internet revolution (Morris 1999; Sunstein 2001; Trippi 2004). Applying the terminology of Weill and Vitale, politics may be said to be facing an analogous migration from *place* to *space*.[4] From the places

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[2]http://pewresearch.org/pubs/1192/internet-politics-campaign-2008.

[3]http://bits.blogs.nytimes.com/2008/11/07/how-obamas-internet-campaign-changed-politics/.

[4]One can argue that the migration of politics from place to space took place several years ago with the advent of the radio and TV. While this is true, radio and TV, however, move only one-way communication—from the candidate to the masses—from place to space. The new Internet-based technologies, especially blogs, social networks, and video sharing, enable the masses to interact with the candidate on an unprecedented scale. We thank the anonymous reviewers for this astute observation.

visited by President Truman in his whistle-stop tour, campaigns have moved to the space of mybarackobama.com. While some aspects of political campaigns will stay the same, continuing to do business as usual, others will be transformed in the Internet space. Traditional election politics featured oration and speech making at rallies, the handshake, fundraising dinners, billboards, TV ads, and campaign offices in small retail storefronts. In the virtual space of the Internet, e-politics focuses on new distribution channels. These new channels include websites and blogs that augment television and print and create new forms of personalized content where the message is textual rather than only oral. In this virtual space, campaign workers will likely spend equal or more time canvassing their electronic neighborhood (e.g., soliciting and managing friendship requests on Facebook, releasing campaign videos through YouTube, or organizing meetings through meetup.com). These online tools allow almost instantaneous and continuous cycles of dissemination and consumption of content at very low cost, making it difficult for campaigns to control. Future candidates and campaigns that ignore these changes likely will be at a significant disadvantage and face becoming irrelevant to next-generation voters.

The goal of this paper is to investigate the migration of politics from place to space, using the 2008 United States presidential primaries as a case study. While certainly the United States represents only one country and a particular type of political system, its reliance on popularly elected leaders in an environment of free-flowing information make it an interesting case for examining the role of the Internet in its election process. What is this role? Weill and Vitale identify the basic systemic changes that are leading the migration from place to space. These systemic e-business changes include the Internet's role in (1) changing the nature of competition, (2) creating low cost, easy to use information distribution and replication mechanisms, and (3) changing supplier and customer relationships. These fundamental systemic changes are now well known in the business literature, but they have not been fully studied in the context of politics (for examples, see Chadwick 2006; Davis et al. 2009; Nimmo 1996). Weill and Vitale's work in e-business suggests the following fundamental parallel questions for e-politics:

- Will the new, low-cost Internet media channels such as blogs, social networks, and video sharing allow lesser known candidates to compete on a level playing field with well known candidates (changing competition)?

- Which of the new Internet media will be important? Will traditional media such as television and newspapers have

Figure 1. President Truman on His Famous "Whistle Stop" Tour During the 1948 Campaign (Image Source: Paul E. Wolfe, courtesy Harry S. Truman Library. The photo date is September 14, 1948.)

Figure 2. mybarackobama.com and Barack Obama's Blog on Race Relations (Image Sources: mybarackobama.com, January 7, 2008 (date on screenshot), and huffingtonpost.com, accessed August 19, 2009.)

a different or diminished role (changing distribution and replication mechanisms)?

• Will the Internet change the extent and nature of citizen interactions with candidates (changing relationships)?

In line with the above, the overarching research question of this paper is to explore the first question regarding how the Internet might change the nature of political competition. Our analysis of the differential impact of traditional, Web 1.0, and Web 2.0 media on presidential campaign politics[5] also provides insight into the second question about changes in media roles. We then use our findings as a starting point to explore new ways in which the field of information systems can make contributions beyond its traditional business and organizational focus.

While this study examines one election cycle in one country, we believe it will yield interesting insights into politics as a whole. We believe information systems can provide insight into *how* technology impacts the societal behavior observed so minutely by political scientists and sociologists. How the Internet can be leveraged to spread a candidate's message has applicability across political systems (Foot et al. 2009), recognizing that cultural and institutional environments may alter their specific content and practices (Anstead and Chadwick 2009).

The paper proceeds as follows: in the next section, we review the relevant literature and point out why an IS perspective is relevant. Following that, we present data leading up to the 2008 U.S. presidential primaries to assess the impact of Internet tools on candidates' poll numbers and visits to their campaign websites. We present our empirical results and address the question of whether the Internet can help a candidate win an election. We extend the discussion and outline a research agenda for e-politics that advocates a multidisciplinary, collaborative approach to the topic.

Literature Review and Role of Information Systems

Information Systems research on societal level issues has addressed online communities (Wasko and Faraj 2005), the

digital divide (Dewan and Riggins 2005), and e-government services (Carter and Bellanger 2005; Watson and Mundy 2001). There are also related studies in political science, communications, and sociology on how the Internet can destabilize political communication (Dahlgren 2005); the impact of Facebook and YouTube on elections (Carlson and Strandsberg 2007; Williams and Gulati 2007); the use of websites to reach voters (Foot and Schneider 2006; Jansen 2004); the impact of Internet access on voting (Tolbert and McNeal 2003); voters' search for information (Redlawsk 2004); the role and biases of traditional media (Baron 2006; Haynes et al. 2004; Sunstein 2001); the use of blogs to depolarize political dialog (Hacker et al. 2006); and visions of digital democracy and the role of new media (Hacker 2002; Howard 2006; Papacharissi 2002; Tewksbury 2006). Several recent edited collections are illustrative of the depth and diversity of research in these fields (Boler 2008; Chadwick and Howard 2009; Panagopoulos 2009; Semiatin 2008).

Generally, the nature and extent of the Internet revolution in politics is in dispute. Proponents of the democratization thesis (e.g., Barber 1998) see the Internet's interactive potential as transformational, while proponents of the normalization thesis (Davis 1999; Margolis and Resnick 2000) or the institutional adaptation model (Chadwick 2006) foresee no Internet induced change in the fundamental political inequalities of the present system. Cornfield (2005) sees potential for a major reconfiguring of the most public aspects of the American political process in one of three ways: (1) one approach to campaigning may dominate, (2) several models could compete over a period of time, or (3) each election cycle and political situation could produce a unique configuration. West (2005) suggests an intermediate position whereby slow but steady incremental changes become significant as these changes accumulate over time. Bimber and Davis (2003) characterize the Internet's role as supplemental rather than displacing traditional media, a highly effective niche communication tool for specific audiences and purposes such as mobilizing political activists.

While all of these studies are helpful, they face at least four limitations.

1. Commentaries and case studies on how particular technologies can change politics are suggestive but more empirical studies are needed to conclusively demonstrate the impact of new technology.

2. Studies that only focus on the impact of single tools such as Facebook have limited utility because they lack the explanatory power of a holistic examination of multiple tools simultaneously. On the other hand, statistical

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[5]The term "Web 2.0" includes blogging, social networking, and media sharing, and "Web 1.0" includes non-interactive informational websites. This categorization is consistent with O'Reilly (2005) and McAfee (2006), who consider Web 2.0 to include web-based, open, and interactive technologies. Note also that this paper only focuses on the above web-based technologies; politics also includes other IT such as text messaging or automatic voice response systems.

analysis such as that presented in this paper allows the simultaneous testing and modeling of multiple independent variables, which enables us to measure the impact of each tool while controlling for the effects of other tools.

3. Previous research has focused on the unidirectional impact of TV, Radio, and newspapers on election outcomes. Web 2.0 is very different, utilizing highly interactive Web 2.0 technologies. These technologies offer affordances of active participation and the integration of different media.

4. Finally, traditional research has studied the results of general election outcomes. Yet, election outcomes are only one measure at a single point in time.[6] Focusing on general election outcomes also means focusing on two or three major candidates because they are the ones who successfully make it through the primary process. In contrast, focusing on candidates who compete in primaries represents a much richer pool for understanding the process of campaigning.

The interactive, nuanced, and interdependent nature of Web 2.0 media means that politics will become much more complex. While we believe that traditional social science explanatory research can still provide value, it will need to become more interdisciplinary and consider more than one media or technology at a time.

In addition, political strategists will also need prescriptive models to plan their campaigns. Basing these on solid scholarly evidence should improve prediction. This leads us to assert that the organization-centric, process-oriented approach of Information Systems is a strength in considering the role of Web 2.0 media in politics. IS has a long tradition of empirical, process improvement, and multidisciplinary research on interactive technologies in decision making, organization design, e-commerce, computer-mediated communication, electronic meeting systems, and virtual teams. This paper argues that the IS discipline is poised to contribute to understanding and influencing the use of the Internet in politics. IS as a discipline offers a process perspective, focusing as much on how an outcome was achieved as the outcome itself. Taking a prescriptive process perspective

regarding technology use in campaigns can lead to new political strategies. In short, IS has an opportunity to directly influence society and the public sphere. In the subsequent sections, we apply a process aware, outcome oriented, and contingent technology approach to study e-politics.
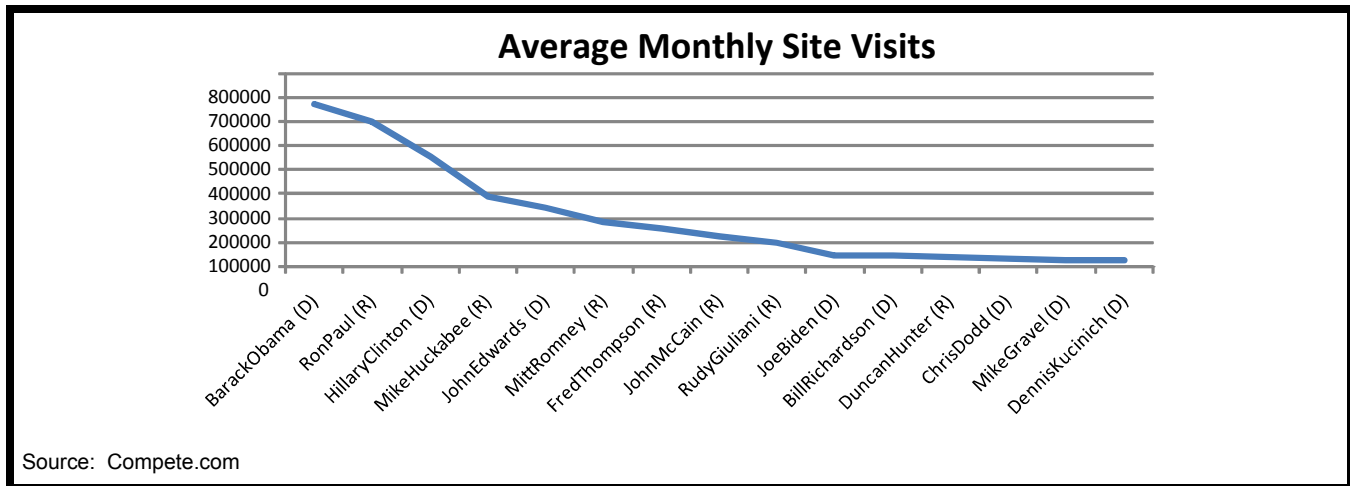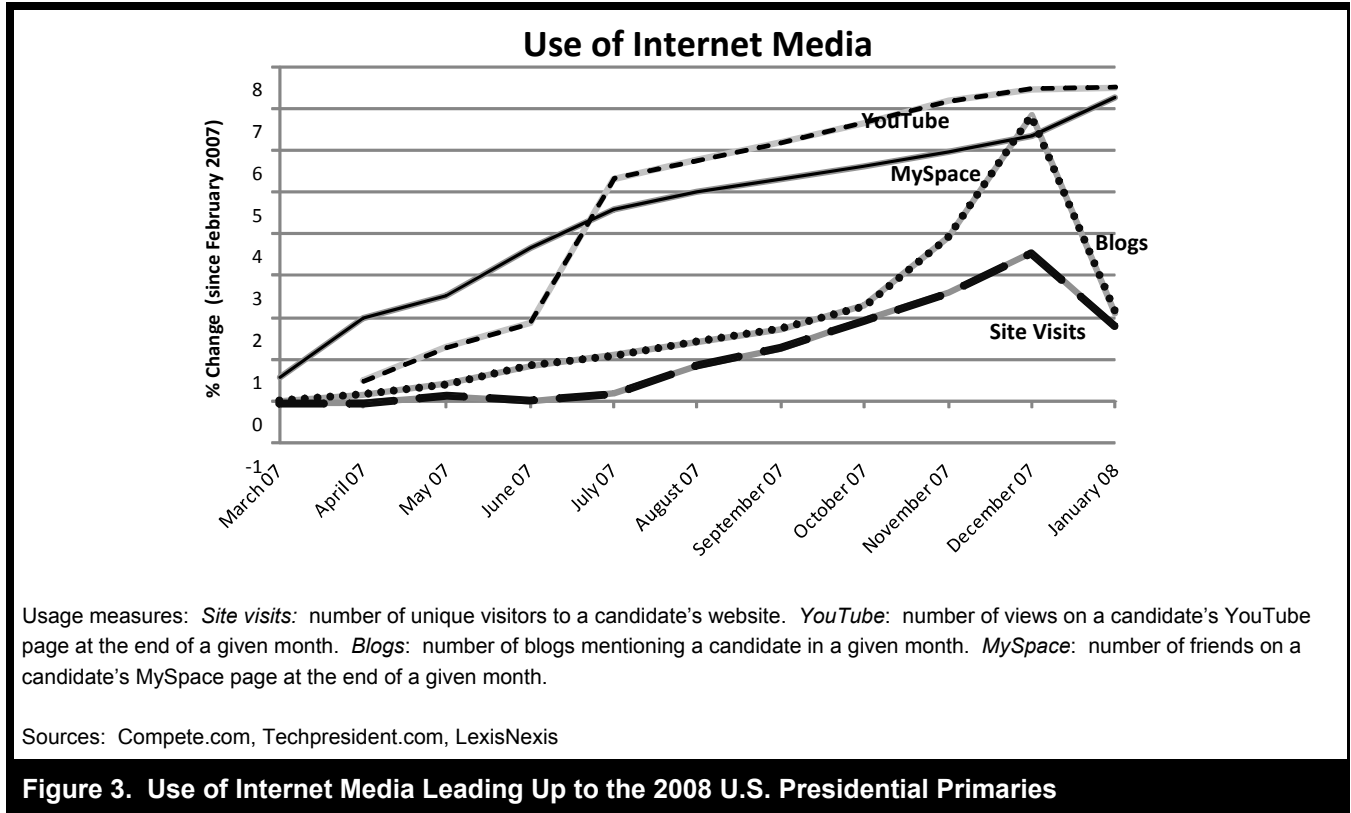
Research Method

The analysis is based upon archival data for 15 primary candidates for president of the United States over a 12 month period, starting in February 2007 and going to January 2008. The total sample size was 176 (we dropped four data points due to incomplete data). This is the critical winnowing period when the media shape voter perceptions of the candidates and campaigns (Davis 2001). The candidates included Joseph Biden, Hillary Clinton, Chris Dodd, John Edwards, Fred Thompson, Rudy Giuliani, Mike Gravel, Mike Huckabee, Duncan Hunter, Dennis Kucinich, John McCain, Barack Obama, Ron Paul, Bill Richardson, and Mitt Romney. We collected data to conduct descriptive and regression analyses on variables that capture the candidates' standings in traditional and new media sources. These variables are the number of TV/radio programs, newspaper articles, articles in web publications such as CNN.com, and blogs per month mentioning a particular candidate, number of friends on Myspace.com and number of views on YouTube videos, the number of visitors to a candidate's website, number of pages per visit viewed at a candidate's website, and data from Gallup polls. We lagged the polling data so that the results of Internet use are connected to the following month's Gallup poll. Overall, the use of aggregate, lagged, time series, longitudinal data from multiple sources provides a rich data set for empirical analysis. The appendix provides additional details on the research method including our sources of data and regression analysis.

Results

Descriptive Statistics: Presidential Campaign Politics on the Internet

As the first primaries and caucuses of the 2008 U.S. presidential primaries got underway, campaigns were registering an increased Internet presence (see Figure 3). Barack Obama led Democratic candidates in the number of visitors to his campaign websites (see Figure 4). The relative dominance of Obama and Clinton on the Democratic side mirrored their presence in the traditional media (Project for Excellence in

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[6]There is a parallel here with the IT productivity paradox controversy (Brynjolfsson and Hitt 1996). Research on IT productivity conducted prior to the 1996 Brynjolfsson and Hitt study did not generally show a positive return to IT investment because output was measured at a highly aggregate level. Subsequent studies that measured IT at a finer level of granularity such as the process level have been able to show a positive return (Barua et al. 1995).

Use of Internet Media

Usage measures: *Site visits:* number of unique visitors to a candidate's website. *YouTube*: number of views on a candidate's YouTube page at the end of a given month. *Blogs*: number of blogs mentioning a candidate in a given month. *MySpace*: number of friends on a candidate's MySpace page at the end of a given month.

Sources: Compete.com, Techpresident.com, LexisNexis

Figure 3. Use of Internet Media Leading Up to the 2008 U.S. Presidential Primaries

Average Monthly Site Visits

Source: Compete.com

Figure 4. Average Monthly Site Visits (February 2007 through January 2008)

Journalism and Joan Shorenstein Center on the Press, Politics and Public Policy 2007).

On the Republican side, Ron Paul led in the number of visitors. This provides some evidence that lesser known candidates can leverage the Internet to get their campaign

message out. While site visits are a likely indicator of interest in a candidate, we also analyzed average page views per visit to assess the depth of interest. In general, we did not find statistical differences among candidates on this metric, which indicates that visitors do not spend more time per visit on websites of lesser known candidates (who are mentioned

infrequently in the mainstream media such as radio or television). This seems counter to the notion that the Internet emboldens voters to learn more about less well-known candidates in the absence of attention from the mainstream media. However, this also implies that there is an opportunity for the relatively lesser known candidates to disseminate information, in that visitors to their website view as many pages per visit as visitors to a website of a better known candidate. In other words, the site "stickiness" is roughly the same as it is for better-known candidates.

In blog mentions, Obama was ahead of all the other Democratic candidates except Clinton (24 percent, Clinton had 33 percent), and first in YouTube views (71 percent), and MySpace supporters (44 percent). Republican blog mentions were more evenly distributed, though Paul was dominant in YouTube (46 percent) and MySpace (34 percent). In the section of MySpace dedicated to the 2008 presidential election, John McCain had 116,047 "friends" on MySpace compared to 587,661 for Obama as of October 2008. It is interesting that neither Obama nor Paul were frontrunners in the polls during the period of this data collection.

To further explore the overall effects of Web 2.0 media, we plotted the total average monthly numbers for each candidate on the following: number of blog mentions, number of MySpace friends, and number of views for YouTube videos from the candidate's page (see Figure 5). The curves in Figure 5 (as well as Figure 4) generally follow the commonly-seen power-law distribution.[7] One implication of this is that the distribution of consumption is disproportionately weighted toward a few, top candidates, with most candidates dividing a small share of the attention. Note that the power-law graph for blogs is kinked and there is a break between the fat belly and the long tail. The drop to the next level of candidates is steep.

Data Analysis

Does presence on the net translate into meaningful results? One measure of candidate viability is polling data. For our

initial analysis, we conducted fixed effects regression analysis (Hsiao 2003) on candidate Gallup poll standings using the following independent variables: traditional media (aggregate of share of mentions in newspapers, TV and radio using principal component analysis (PCA)), Web 1.0 (aggregate of share of visits to candidates' website and web publications such as CNN.com using PCA), and Web 2.0 technologies (see Table 1). To account for lags between changes in Internet presence and effect on poll numbers, we matched the polling data for each month with measures from the previous month (see the appendix for further details).

Surprisingly, only blogs are significantly associated at the .05 level with an increase (or decrease) in Gallup poll standings. The coefficients of traditional media, which include TV, newspaper, and radio, and Web 1.0 media (such as candidate sites as well as mentions in web publications such as CNN.com) were not significant. This result is counter to conventional wisdom about the power of TV, radio, and newspapers.

Our finding is consistent with Veenstra and Sayre (2009), who show that in the 2008 presidential election, online predictions were much more accurate than those projected by traditional news sources. They explain their findings in terms of journalistic bias toward what is most newsworthy and conventional media's tendency to rely on prevailing wisdom about who and what matters in elections. Our data suggest that blogs are not using that same filter, and hence may be more in sync with the candidates' actual poll standings. One can argue that collecting data on the number of blog mentions without determining whether the blog posts were positive or negative only captures part of the story. However, studies in marketing and IS have shown that the volume matters more than the mean of online reviews in influencing sales (Chen et al. 2004; Liu 2006).

The above analysis provides a high level view of the influence of web-based and traditional media. Candidates arguably have very little direct control of traditional media or web publications. Web 2.0 media, because of their open and interactive nature, are much more amenable to influence by campaigners. For example, candidates can create their presence on YouTube and MySpace to disseminate information to their supporters. Similarly, political campaigns have devised ways of using the blogosphere to their own advantage. For example, some campaigns hire paid bloggers to "write (blogs), develop Web sites, connect with energetic allies on the Internet, respond to online critics, and advise their employers about how to behave in the blogosphere."[8] Further, many

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[7]The power law is a relationship between two variables that exhibits scale invariance. Power-law relationships are used to characterize many kinds of natural phenomena including the 80-20 rule, Pareto's law of income distribution, and the law of gravity. Typically, the right hand side of a power-law graph is known as the long tail and represents the less popular segment, while the left hand side is known as the fat belly and represents the few that dominate. The power-law has sparked many truisms in society such as "the rich get richer." Our application of the power-law relationship here is exploratory as the number of available data points is not sufficient for definitive conclusions.
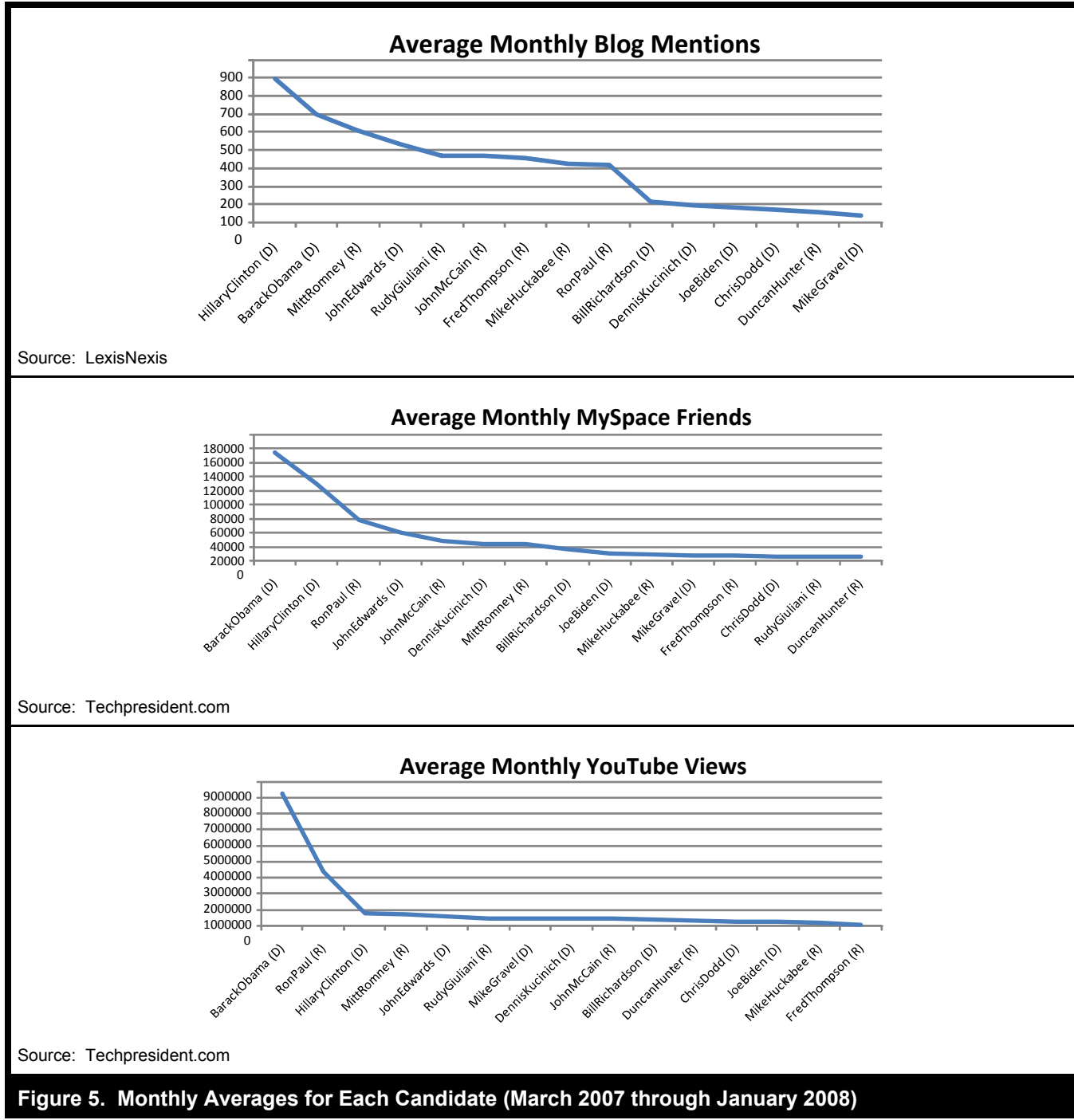
[8]http://www.msnbc.msn.com/id/15498843/, retrieved on July 30, 2009.

Figure 5. Monthly Averages for Each Candidate (March 2007 through January 2008)

Table 1. Impact of Media on Gallup Polls[9]	
Media	**Coefficient (s.e.)**
Traditional media	0.24 (0.17)
Web 1.0	0.13 (0.13)
YouTube	-0.10 (0.05)
MySpace	-0.1 (0.08)
Blog mentions	**0.54 (0.17)***
R^2	35.21
F-Statistic	**16.9563***

*significant at 0.1 level; ** significant at 0.05; *** significant at 0.01

candidates use their campaign websites to raise funds and to influence voters by directly communicating with those who visit their sites.[10]

Next, we take a more granular approach by specifically examining the effect of web-based technologies used by the candidates themselves in their campaigns, which is the primary focus of our study. This includes candidates' own campaign web sites as well as Web 2.0 social media such as MySpace, YouTube, and blogs. In Table 2, we analyze the relationship between these tools, the Gallup poll results, and campaign site visits (as per equations 1 and 2 in the appendix). Not surprisingly, blogs still have the strongest association with polls.

The positive and significant coefficient of YouTube views in column 3 is interesting, especially since there is no corresponding relationship with Gallup polls in column 2. A likely reason is that YouTube views may be acting as a "teaser." YouTube specifically, and media sharing in general, may represent a complementary channel of communication that does not directly change polls but provides enough persuasion that voters want to learn more.

From a competitive perspective, the question arises whether Web 2.0 tools are more important to the less well-known candidates. To determine the answer to this question, we subdivided our sample based on the average number of radio and television programs that mention a candidate each month. Candidates whose average share of mentions was above the median were placed in the "well-known" category and the remaining candidates were placed in the "lesser-known" category (see Table 3). We ran regressions as per equations 1 and 2 in the appendix using data from the well-known and lesser-known categories separately.

The results, as shown in Table 4, suggest that blogs have a significant relationship with the poll numbers for well-known candidates. Curiously, their effect for lesser-known candidates is not significant.[11] The significant relationships with YouTube and MySpace for the lesser-known group suggest that these Web 2.0 tools can have positive effects on their poll standings. Among the lesser known candidates, Ron Paul held the largest share among Republicans on MySpace and YouTube and probably benefitted the most from these tools. Ron Paul, for example, was able to raise more funds than the other Republican presidential candidates in the final quarter of 2007, mainly due to his innovative Web 2.0 marketing.[12] Others, like Dodd and Hunter in the lesser known group, did not have a significant presence on YouTube or MySpace and seemed not to have benefitted as much since they trailed far behind the frontrunners in all periods of the campaign. YouTube and MySpace represent different channels of com-

[9]Each cell in this table and all subsequent tables reports the regression coefficient followed by the standard error in parenthesis. The coefficients show relative positive or negative impact. For example, a 1% increase in a candidate's relative blog mentions leads to a 0.54% increase in Gallup poll numbers (with a standard error of 0.1). The statistically significant results are shown in boldface. Throughout the paper, we will use * to denote significance at the 0.1 level, ** at the 0.05 level, and *** at the 0.01 level.

[10]Web 2.0 media, by its ease of use and accessibility, could also be used to suppress dissenting voices and exert undue influence over voters and the citizenry in general. For example, Robert McChesney thinks that new media will make it easier for a few powerful entities to control global media (see McChesney 2008).

[11]The statistical power of the test was 0.99, calculated using Soper's online calculator (Soper 2010). Since these results are beyond the generally accepted threshold of 0.8 (Cohen 1988), we are confident that there was sufficient power to detect an effect.

[12]http://www.nextgengop.com/2008/11/13/recognizing-the-lessons-of-the-ron-paul-revolution/.

Table 2. Overall Effect of Candidates' Internet Presence on Poll Numbers and Site Visits		
	Gallup Polls Coefficient (s.e.)	**Site Visits Coefficient (s.e.)**
Site visits	**0.14 (0.07)****	–
Page views	-0.03 (0.1)	0.15 (0.11)
YouTube views	-0.04 (0.06)	**0.43 (0.05)*****
Blog mentions	**0.75 (0.11)*****	**0.79 (0.11)*****
MySpace friends	-0.1 (0.08)	0.01 (0.09)
R^2	34.7	51.9
F-statistic	**16.6**	**42.4*****

*Significant at .01 level; **significant at 0.05 level; ***significant at 0.01 level.

Table 3. Well-Known Versus Lesser-Known Candidates	
Well-Known	**Lesser-Known**
Hillary Clinton (D)	Duncan Hunter (R)
John Edwards (D)	Ron Paul (R)
Barack Obama (D)	Mike Gravel (D)
Rudy Giuliani (R)	Dennis Kucinich (D)
Mike Huckabee (R)	Bill Richardson (D)
John McCain (R)	Joe Biden (D)
Fred Thompson (R)	Chris Dodd (D)
Mitt Romney (R)	

D = Democrat; R = Republican

Table 4. Analysis of Web 2.0 Media for Well-Known and Lesser-Known Candidates[†]				
	Well-Known Candidates		**Lesser-Known Candidates**	
	Gallup Polls Coefficient (s.e.)	**Site Visits Coefficient (s.e.)**	**Gallup Polls Coefficient (s.e.)**	**Site Visits Coefficient (s.e.)**
Site visits	**0.18 (0.1)***	—	-0.04 (0.03)	—
Page views	-0.002 (0.18)	0.17 (0.19)	-0.01 (0.02)	0.1 (0.1)
YouTube views	-0.005 (0.09)	**0.37 (0.09)*****	**0.04 (0.024)***	**0.54 (0.06)*****
Blog mentions	**0.77 (0.16)*****	**0.78 (0.14)*****	0.07 (0.07)	**0.7 (0.27)****
MySpace friends	-0.15 (0.12)	0.04 (0.13)	**0.1 (0.04)****	-0.01 (0.17)
R^2	38.0	43.1	27.2	74.9
F-statistic	10.1***	15.7***	5.1**	53.2***

*significant at 0.1 level; **significant at 0.05 level; ***significant at 0.01 level

[†]Overall sample size was 176, including 95 for well-known candidates and 81 for lesser-known candidates. The variance inflation (VIF) values were below the recommended level of 10 (Neter et al. 1989), suggesting that multicollinearity is not an issue in our data.

munication and persuasion; YouTube is more visual and can have an emotive impact while MySpace affords direct one-to-one linking. These tools allow supporters to promote their candidate directly to people they know, rather than through the mediation of bloggers or traditional media gatekeepers. We conclude that the Internet and Web 2.0 media in particular do increase the threat of new entrants and given the low barriers to entry, it is likely that this phenomenon will only gain ground.[13]

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[13]We also subdivided our data by party. The regression results for Democrats and Republicans are similar and blog mentions are the only significant influence. In addition, site visits and page views are also significant for Democrats. This result may be reflective of the highly skewed distribution of the candidates' share of visits, which is in tandem with their relative poll standings, neither of which characterizes the Republicans' share of visits (see Figure 3).

Discussion: Can You Win an Election Using the Net?

Findings

Overall, the results show that the Internet is changing the nature of political competition. Blogs powerfully correlate with Gallup polls. The association between polls and other Web 2.0 media is not nearly as powerful, even when the association is statistically significant. For example, even though the correlation of YouTube with Gallup polls is significant for lesser-known candidates, the coefficient is only 0.04. This means that each 1 percent increase in share of YouTube views is associated with only a 0.04 percent increase in Gallup poll standings. These numbers may not seem exciting to political strategists. However, the use of these technologies is growing rapidly among those who will

become the next generation of voters, and could become very powerful in the next election.

Still, the results for blogs are an eye-opener and herald a long-term change in the competitive nature of politics. This result is counter to conventional wisdom about the power of TV, radio, and newspapers given that blogs attract only a fraction of the attention given to conventional media. One interpretation of this result is that blogs are emerging as an important medium for political persuasion due to a variety of reasons, including higher credibility than traditional media among politically interested Internet users (Johnson et al. 2007), low cost, real- time broadcasting, and the bloggers' "collective ability to act as a leading indicator of future news coverage" (Farrell and Drezner 2008). Blogs are also powerful because of their ease of use, interactivity, and perceived independence, and as a result they provide an affordance of many-to-many interaction (Rice 1984), and on an unprecedented scale. In other words, blogs have the potential to *socialize* and *scale* campaign movements like no other Web 2.0 (or Web 1.0 or traditional media) channel of communication.

The use of blogs may move us closer to the ideal of a deliberative forum discussed by philosophers such as Jürgen Habermas (Klein and Huynh 2004), or politicians such as Al Gore (Gore 2008). Their vision is an egalitarian public sphere that encourages the exchange of different points of view. On the other hand, our data focus only on the correlation of blog mentions to polls; they do not say anything about the quality and tone of deliberation. There are real concerns regarding the proliferation of content on the blogosphere, as Habermas himself argues that the unrestricted nature of contributions comes with an undesirable flood of unedited, unchecked opinion (Habermas 2006). This can lead to information overload (Cayzer 2004). Source credibility is also an issue, and the motivation of bloggers requires further study (Hsu and Lin 2008). Adamic and Glance's (2004) study of politically oriented blogs highlights these dangers. Their study reveals that bloggers tend to reference other blogs with similar viewpoints more often than those with opposing views, leading to the "siloing" of political thought. Therefore, it is too early to say that the deliberation in blogs contributes to an enlightened and informed debate.

Regardless of tone and intent, it is clear that blogs change the dynamic between voters and candidates. In the past, the public perception of candidates was a function of the candidate themselves and how they were portrayed in the traditional media. Web 2.0 technologies such as the blogosphere represent both opportunities and risks to candidates for controlling their message. While candidates can control their own "channels" of Internet communication, there are now many more outlets whose markedly different characteristics and nuances are much harder to control and influence.

Political campaigns will need new strategies. It is unlikely that simply going out and "pressing the flesh" or saturating the airwaves with campaigns ads will by itself prove successful. We surmise that the next election may be won by the politician who delivers his or her message most effectively via the blogosphere rather than the one who is the most telegenic.

Often a few candidates receive a disproportionate share of attention in the traditional media such as television and radio. The same was true for the new media of websites, blogs, MySpace, and YouTube. However, we also found evidence that the Internet lowers the barriers of entry and levels the playing field for candidates to the extent it allows candidates to circumvent traditional media and disseminate their message widely and inexpensively. Both MySpace and YouTube were related to poll standings when we examined their effects for lesser known candidates.

Limitations and Questions for Further Study

As with many studies, our results must be interpreted with care and within the proper context. First, focus of this study is a single election cycle in a single country: the United States' 2008 presidential primaries. Comparative studies in other contexts are needed. Second, the degree to which we can generalize from our findings is constrained by the limitations of our data and measures. Polling data are not a perfect predictor of electoral success, but rather a snapshot of a candidate's standing at a point of time. Further, inferring causality from regression and correlation analysis of highly aggregated, public data must be done with caution. One may ask whether it is blog mentions that are impacting the poll numbers or are the well-publicized results of opinion polls impacting who gets written about in the blogosphere. We attempted to address this by lagging the data so that the results of Internet use are connected to the following month's Gallup poll. Overall, the robustness of our results is increased by the use of aggregate, lagged, time series, longitudinal data from multiple sources. The study does, however, have some notable limitations, and additional research is required to validate our exploratory analysis.

It could be argued that fundraising is as important a dependent variable as Gallup polls, and the results will be even more interesting if they also apply to fundraising. To test this possibility, we analyzed fundraising data (from opensecrets.org) and found that, consistent with our other results, only blogs have a positive and significant impact on a candidates' success in fundraising.[14] However, fundraising data were only

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[14]The regression coefficient was 0.01 with a standard error of 0.002. The results were significant at the 0.001 level.

available on a quarterly basis and we aggregated the independent variables by taking an average over each quarter. Further research using additional data is necessary to fully understand the impact of the Internet on fundraising. Online fundraising, which was a major element in 2008, might show different results and should be examined separately.

There is also potential for selection bias in that we used aggregation services such as LexisNexis to collect some data and limited our analysis of social networking to MySpace and media sharing to YouTube. Expanding the technologies used (e.g., adding Facebook, meetup.com, eventful.com, Twitter, and others) will allow a more systemic understanding of the role of the Internet in elections. Including a comprehensive set of technologies in a larger data set will allow finer-grained analysis of the differences in technologies and how those characteristics impact campaigns. For example, Gerber and Green (2000) found that door-to-door canvassing impacts voter turnout, whereas telephone calling and mass mailing had little or no impact. Canvassing through highly personal media such as Facebook or text messaging may increase voter interest.

Finally, our analysis did not consider whether the Internet content in question had a positive or negative orientation. Sites such as YouTube may be a double-edged sword where candidates post campaign videos at a low cost, but where detractors can also post unfavorable material. The same is true of blog entries and those who post comments about them.

Our results provide evidence that the Internet could change the competitive strategy of candidates. We need to expand the regression-based approach in this paper to include longitudinal analysis of the complete U.S. presidential campaign as well as Senate and House races, and other levels of office. For example, in November 2008, a 20-year-old college student won a county seat in New Hampshire by defeating the three-term 66-year-old incumbent. She won because she used Facebook to mobilize young college students in the county.[15] Web 2.0 technologies could enable voters in small local elections to discuss and deliberate issues at a level of citizen engagement (for low cost and with high accessibility) that was previously impossible. Candidates for lower levels of office who have been slowest to create Facebook pages and open YouTube channels (Williams and Gulati 2009) may need to rethink their campaign strategies.

Understanding Internet Media in Politics: A Research Agenda for Information Systems ∎

This study is an example of how the field of Information Systems can move beyond the traditional focus on business and the organization and tackle larger societal issues. Political science is one area in which IS's deep understanding of the effect of technological systems, and information creation, use, and management, can be of great value. In the movement from place to space in politics, IS can help create contingent models that describe and prescribe the most relevant technologies for different types of candidates and assess the changing role of customer-voters and supplier-politicians. Specifically, IS contributes two unique perspectives to research on politics.

- **Process centric:** Certain aspects of politics, specifically elections and campaigns, are at their very core a set of steps (i.e., processes with their own sets of procedures). This implies campaigns can be conceptualized as a set of steps to influence voters with measurable outcomes over time. In this paper, we applied this process orientation to an election and showed new ways to assess outcomes (Gallup polls). There are many other interesting processes in politics that could benefit from further analysis, ranging from campaign fundraising to bureaucratic rulemaking.[16] The process centric nature of IS is often taken for granted, but it can provide a valuable perspective.

- **Comparison of technologies and matching "features" to behaviors and outcomes:** The Internet is not a monolithic concept; it represents a large and varied collection of technologies with different properties and capabilities (e.g., YouTube is not the same as a blog). Further, specific technologies contain different attributes that afford different behaviors (e.g., YouTube provides both commenting and rating features, but it is unclear whether and which of these lead to increased involvement by voters). IS brings a set of theories and frameworks, and more fundamentally a comparative tradition, that can afford new insights into the "black box" of technology. This paper is an example, as it is one of the first empirical studies to consider the comparative impact of technologies on the political process.

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[15]http://www.gainesville.com/article/20081113/ZNYT02/811133010/1109/SPORTS?Title=Dartmouth_Junior_Wins_County_Election_and_Starts_Town_vs__Gown_Dispute.

[16]Federal agencies in the United States are required to publicize new rules, followed by a period of public comment. Increasingly, this process is being handled online, and new IT systems will be needed to collect and summarize the input in a way that can be meaningfully understood by these agencies.

In general, the highly interactive, nuanced, and interdependent nature of Internet technologies will present research challenges. Single technology, purely descriptive, outcome-only research that ignores the characteristics and process of using the underlying technologies may not suffice to throw light on the subject. In this paper, we integrated perspectives (and authors) from both political science and IS to open new doors in e-politics research. IS by itself certainly cannot provide all the answers, and we envision that future research will continue to require the collaborative and multidisciplinary orientation of this paper. A recent political science study by Anstead and Chadwick (2009) demonstrates that there is a complex interaction between technology and political institutions, and they argue that both are important for understanding organizational change.

Based on this perspective, we propose an agenda for e-politics research. We start with a focus on the process of campaigns and elections, but then move beyond this to address other aspects of politics, such as discourse and decision making. The agenda is organized around the need for explanation (why), prescriptive frameworks (how), and new tools (what); the need for understanding the social and global consequences of e-politics, as well as the need for utilizing new data sets and analytic methods. The agenda is organized around four questions.

1. Why is the Internet changing the political landscape (explanation)? This paper provides some evidence that vast changes are occurring in the role of technology in politics. The approach that IS takes in looking at underlying mechanisms of technologies, instead of just the effect of a particular artifact, can provide deeper insights. Blogs, social networking sites, and media sharing sites share similarities but they also have important technological differences. By opening up the black box of Web 2.0 technologies, Information Systems can create contingency models of usage and influence for e-politics. Specifically, we need theoretically motivated empirical explanations for why these changes are occurring. Several topics are particularly interesting and important.

   • The competitive landscape of politics is changing. Can strategic management theories be applied to politics to understand these changes? Which theories are the most relevant? A better understanding of these changes can yield new insights for designing more effective campaigns that leverage the Internet.

   • The relationships among and between voters (citizens) and candidates (elected officials) is changing. Social networking research has shown that word of mouth interaction through casual acquaintances is very important to spreading information because these weak ties act as a bridge among dissimilar people (Granovetter 1973). These weak ties may be the key to understanding how citizens–voters–bloggers persuade each other and form new relationships. Understanding the underlying influence mechanisms on the Internet is important, given that journalism and communications scholars Johnson and Kaye (2004) found that the people who were more active readers of political weblogs believed them to be more credible than traditional media.

   • Which attributes of the IT artifact are most important in influencing usage? Markus and Silver (2008) expand on DeSanctis and Poole's (1994) work on structuration to identify three distinct attributes of IT artifacts: technical objects, functional affordances, and symbolic expressions. Griffith and Northcraft (1994) document both main and interaction effects for the type of medium and its component features. Distinguishing among the attributes of the IT artifact as well as investigating the interactions among them is often overlooked in existing studies of the uses and effects of technology in political campaigns. Such studies can open up the black box of the IT artifact and yield new insights on how and why Internet technologies influence behavior.

2. How can campaigns leverage the Internet (prescription)? The change from place to space in politics will result in massive IT investments. The simple transactional databases that kept track of voters or funding sources of previous years are morphing into expensive, complex, massive, highly interactive systems. IS can provide prescriptive recommendations on how to acquire, build, purchase, manage, and cost-justify technology investments. Yet, it is unclear if traditional IS frameworks and theories can be simply applied to e-politics. Compared to traditional business, political campaigns are short-lived and have defined starts and endings. They are highly volatile with drastic changes of direction, the personnel involved are often transitory and change routinely, and funding is episodic (donations increase or decrease). Therefore, there is a need to more systematically analyze the role of technology in politics and provide prescriptive recommendations. Several topics are particularly important.

   • What is the best way to manage systems that support e-politics? Do traditional IS theories and frameworks on how to acquire and manage systems apply?

- What are the best tools for influencing voters? Which tools reach the most voters? Which tools are the most persuasive? Campaign strategists will need comparative frameworks that will allow them to choose the most relevant technologies.

- How can campaigns craft highly personalized messages based on demographic information? For example, canvassing through the use of social networks may target the youth vote, while blogs may target an older demographic. Prior research on the social calculus of voting suggests that interpersonal discussion has a stronger impact on a person's voting choice than traditional media (Beck et al. 2002; Katz and Lazarsfeld 1955). Do blogs and social networks demonstrate similar interpersonal effects? Perhaps there is a group (or several groups) that e-politics does not reach.

- Marketing and IS research on persuasion and recommendation systems have looked at the viral properties of word of mouth and word of web (Ansari et al. 2000; Chevalier and Mayzlin 2006; Resnick and Varian 1997; Shardanand and Maes 1995). It will be interesting to expand this research into e-politics (e.g., can candidates employ a viral strategy to enlist supporters by leveraging their MySpace and Facebook community to join the campaign's network?).

3. How can citizens leverage the new Internet technologies (design)? The tools to create and use information on the Internet continue to proliferate. Yet, we know very little of how this usage occurs and what citizens require to more effectively leverage the Internet to make informed choices and participate in the political process. Several questions are particularly relevant.

- What tools are needed that will allow voters to make better choices and leverage the availability of information in this new IT-enhanced environment? Information Systems research on electronic meeting systems (Nunamaker et al. 1991) and anonymity (Connolly 1990) can provide insights on how strangers deliberate on the Internet.

- Will the availability of information lead to information overload? The ability of the blogosphere to serve as a "public sphere" for the exchange of ideas and create a well-informed citizenry is threatened by a chaotic flood of content too large for an ordinary citizen to sort through. What are the consequences of information overload and what tools and struc-

tures are needed to help voters and candidates manage the flood of information available on the Internet? One of the implications of this is seen in Adamic and Glance's (2004) finding that, even on the Internet, we tend to filter out opposing points of view. Sunstein (2004) suggests that the problem of filtering is a significant threat to public discourse. New tools and techniques will be needed to navigate the growing blogosphere (Cayzer 2004).

4. What are the social and political system consequences of the above changes? Our study provides insight into the nature of the rising influence of the Internet on political campaigns, but it does not address its potential impact on the social and political systems themselves. A process perspective would be useful here also: political decisions are not limited to citizens voting in elections, and the Internet offers the potential for greater citizen participation in the creation of laws and regulations. But while the Internet scales interpersonal discussion and self-organizing capabilities to unprecedented levels, its promise as a true forum for deliberative discourse remains largely unfulfilled. Two questions are particularly important.

- Will the Internet change the form of political discourse? Specifically, has the form of discourse changed the content (Asif 2007), or are voters simply moving from shouting slogans on streets to slogans on the Web? How might the Web be used to support increased mutual understanding and tolerance in political discourse in a value-pluralistic society? Or, could it be that the effect of the Internet on politics in society might not be one of enabling better unity of purpose and cooperation through communal interaction and discussion but instead contribute to its fragmentation into an increased number of disconnected, mutually antagonistic and alienated subgroups? Further, how might political interactions through the Internet contribute, if at all, to the emergence of a fairer, more just society?[17]

- Will the impact of the Internet vary across political systems? Our study focused on the United States only. Future research must also study impact across national boundaries and political systems. Despite the similarity of free and competitive elections, governments differ in the specific forms, their insti-

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[17]We would like to thank an anonymous reviewer for suggesting these specific questions for future research.

tutional arrangements, party organizations, candidate selection processes, and campaign regulations, and these characteristics interact with the technological affordances of the Internet (Anstead and Chadwick 2009; Mazarr 2002). In political systems where the flow of information is constrained by political elites who monitor and control Internet content, we would expect e-politics to have a different dynamic.

New techniques and data sets are needed to research the above changes. E-politics research brings new questions into the mix and as a consequence it will require new sources of data and measurement to go beyond single technology descriptive studies. A unique feature of this paper is the use of multiple data sets and new dependent variables. There is an evolving "open-source" paradigm for access to data on the Internet. Sites such as YouTube, MySpace, Alexa, Compete. com, Techpresident.com, and Technorati increasingly provide access to large datasets on products, brands, media use, and political campaigns. As a result, we were able to creatively integrate a unique data set on a diverse set of variables ranging from social networks, web videos, websites, and traditional media such as newspapers, television, and radio, as well as data from polling agencies such as Gallup.[18] Although Gallup polls are commonly used as an independent variable predicting electoral success, they have been underused as a dependent variable. This is surprising because polls measure the progress of a campaign over a period of time, whereas election outcomes are an aggregate measure at a single point in time. This much more granular and process-oriented data will allow more in-depth research because the evolving strategies of lesser known candidates can be compared with the typical two or three major candidates.

Our study also contributes to the emerging research stream on the utility of real-time, micro-level data from online user generated content for economic and business forecasting. For example, Wu and Brynjolfsson (2009) showed that housing-related consumer searches on Google can predict future home sales and prices more accurately than macro data from government and trade groups. Our results also suggest that blogs are a better predictor of poll numbers in campaigns than conventional media such as TV and radio. Other online tools such as prediction exchanges enable us to collect data on the public perception of a candidate on a minute-by-minute basis, and are an even finer measure than Gallup polls. Political

strategists can use these tools to get real-time feedback on speeches, announcements, or debate performances of the candidates. In general, the IS perspective of analyzing multiple technologies and examining the underlying characteristics of each technology can lead the way in applying the new, more granular data to compare differential impacts of Web 2.0.

Conclusion

The ancient Greek *agora* was seen as an open place for gathering, a free market both literally and in terms of ideas. It is associated with the utopian ideal of a direct democracy where citizens listen and share ideas and govern directly. The Internet is not an *agora* and may never reach that ideal. However, it is a compelling tool to enable a large scale movement of the free market of ideas and mutual influence from *place* to *space*. Politicking on the Internet has the potential to be a game-changer.

This paper has argued that Information Systems has an important and heretofore largely unrecognized role to play in understanding e-politics. We see an opportunity for IS to significantly increase its relevance by leveraging its traditional strengths in comparative-technology, process-oriented empirical research and applying that perspective to the larger society.

Our study of the period leading up to the 2008 presidential primary season is one such example of how this approach can yield new insights. The study is one of the first to investigate the contingent impact of related Web 2.0 technologies on the campaign process using a novel combination of data sets and process and outcome variables. The results indicate that the Internet, and especially the blogosphere, can influence the campaign process and the results of elections. As a result, the Internet may foster a new generation of politicians who ignore traditional "big money" tactics in favor of grassroots campaigns. Just as the Internet has reduced the barriers to entry in many industries, it may also serve to level the playing field for candidates. The media industry, political consultants, candidates, and voters will need to adjust their behaviors to leverage this new competitive environment.

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[18]This is also one of the first studies in information systems to consider the impact of both online and offline activities on outcomes (in this case, the Gallup poll numbers). While previous studies analyze the impact of online media on sales or offline media on sales separately, there are very few studies that combine the two.

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Appendix

Sources of Data

The analysis includes aggregate data for 15 candidates over 12 months starting with February 2007, with a sample size of 176 data points (four data points are missing). We collected data on site visits and number of page views per visit from Compete.com, and YouTube views and number of MySpace friends from Techpresident.com. The data for newspapers, TV–radio, Web publications, and blogs is sourced from LexisNexis. Newspapers represents the number of references made to a candidate in the top 25 newspapers by circulation in the United States. TV–radio represents the number of references made to a candidate in the 33 TV or radio shows tracked by LexisNexis including ABC, CBS, CNN, Fox, and NBC, as well as broadcasts from EuroNews, Kremlin, Al-Jazeera, Channel News Asia, and CNBC. Web publications are references to a candidate in 202 Web publications including Briefing.com, BusinessWeek online, CNN.com, Economist.com, eWeek.com, Kiplinger, Salon.com, Slate, and Yachting and Boating world. Blogs represents the number of blogs that mention a candidate among the 28 online blogs and blog aggregators syndicated by LexisNexis such as Billboard, Jaded Insider, Reel Pop, and Meeting Industry Gurus. Blog aggregators include NewsTex Financial, government, politics, legal, media, and medical blogs which number in the thousands. This number changes rapidly as blogs are created and disbanded.

Data Analysis

We used regression to analyze the data. The regression model included the impact of site visits, page views, YouTube video views, blog mentions, and MySpace friends on candidates' performance in the polls. We lagged the polling data so that the results of Internet use are connected to the following month's Gallup poll. The specific variables include

- $GALLUP_{i,t+1}$: The dependent variable $GALLUP_{i,t+1}$ is the Gallup poll numbers for candidate i in month t+1. In some cases, Gallup conducts more than one poll in a given month (usually two). We measure $GALLUP_{i,t+1}$ as the average of the Gallup poll numbers for candidate i in month t+1.

Since the Gallup polls are percentages and are reported for Democrats and Republicans separately, we normalized our independent variables. Those variables are

- $VISITS_{i,t}$: The normalized value of the number of people who visit candidate i's website in month t. For example, if there are three candidates A, B, and C in the Democratic party and 20, 30 and 50 people visited their website in May 2007, then the values for the $VISITS_{i,t}$ variable for May for these candidates are 20/100, 30/100, and 50/100 respectively.

- $PAGES_{i,t}$: The normalized value of the average number of page views at candidate i's website during month t.

- $YOUTUBE_{i,t}$: The normalized value of the number of people who viewed videos posted on candidate i's YouTube page at the end of month t.

- $BLOG_{i,t}$: The normalized value of the number of blogs that mention candidate i in month t.

- $MYSPACE_{i,t}$: The normalized value of the number of friends that candidate i has at the end of month t.

Our empirical model (for results in Tables 2 and 4) is as follows:

$$\text{GALLUP}_{(i,t+1)} = \chi1\ \text{VISITS}_{(i,t)} + \chi2\ \text{PAGES}_{(i,t)} + \chi3\ \text{YOUTUBE}_{(i,t)} + \chi4\ \text{BLOG}_{(i,t)} + \chi5\ \text{MYSPACE}_{(i,t)} + \chi_i \tag{1}$$

where i = 1…15 denotes each candidate, and t = 1…T denotes the month. The dependent variable is the candidate's Gallup poll number measured in month t+1, and the independent variables are measured in month t. Our data have observations on 15 candidates over multiple time periods, and therefore represents a panel data model. According to prior research (Hsiao 2003), the results of OLS may be biased in panel data such as ours. Therefore, we control for the candidate specific fixed effects by including a dummy variable for each candidate.

In addition, we are also interested in understanding the impact of blogs, social networks, and viral videos on the visits to a candidate's website. Therefore, we have created a second model to reflect this (for results in Tables 2 and 4 with site visits as the dependent variable)

$$\text{VISITS}_{(i,t)} = \beta1\ \text{PAGES}_{(i,t)} + \beta2\ \text{YOUTUBE}_{(i,t)} + \beta3\ \text{BLOG}_{(i,t)} + \beta4\ \text{MYSPACE}_{(i,t)} + \beta_t \tag{2}$$

The variance inflation (VIF) values (for regression in Tables 1, 2, and 4) were below the recommended level of 10 (Neter et al. 1989), suggesting that correlation between our independent variables is not a concern in our data. *F-tests* show that all the models in Tables 1, 2, and 4 are significant at the 0.05 level.