
Pursuing Social Change Online

The Use of Four Protest Tactics on the Internet

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This article examines the distribution and architecture of web sites hosting or directly linking to opportunities to participate in four online activist tactics: online petitioning, boycotting, and e-mailing and letter-writing campaigns. Specifically, this article addresses five basic structural questions: (1) Are opportunities to engage in these tactics usually organized around social movement organizations and/or actors? (2) Do sites tend to host or link to these tactics? (3) On average, how tactically specialized or tactically diversified are sites? (4) How are these tactics distributed across different types of sites? and (5) How many implementations of each tactic were offered per web site? Contributions include a clearer understanding of online opportunities to participate in these four tactics and the introduction of an innovative, methodological technique that generates best approximations of reachable populations of online content, which can be randomly sampled when those populations are large.

Keywords: *petition; boycott; letter-writing; e-mailing; methodology; sampling; activism; social movement*

From Mexican rainforests (Garrido & Halavais, 2003; Kreimer, 2001; Martinez-Torres, 2001) to urban centers in Southeast Asia (Wong, 2001), online political activity has expanded rapidly. Although much of this activity involves the use of computerized communications to coordinate offline political events (e.g., Almeida & Lichbach, 2003; Carty, 2002; Eagleton-Pierce, 2001; Garrido & Halavais, 2003; Martinez-Torres, 2001; Nip, 2004; Van Aelst & Walgrave, 2002), such as rallies, a substantial number of web sites have incorporated forms of activism that web site visitors can at least partially, if not wholly, engage in while online. The online petition, which is a statement published online that individuals can sign as a show of support, is a prime example of this kind of activity. When a web site hosts a petition, visitors are generally able to read the text of a petition and electronically sign it; ultimately, the petition is forwarded to its target (e.g., congressional members), although sites vary in the methods they use to deliver the petition (e.g., electronic or physical delivery).

Author's Note: I would like to thank Alan Schussman for his technical and programming support, Kim Caplan for help in preliminary coding, and Katrina Kimport for her extensive efforts in coding and data cleaning. I benefited from comments on prior drafts from Alan Schussman, Jenny Irons, and Sarah Soule. I would also like to acknowledge the generous financial support of the following: the Institute for Social, Behavioral, and Economic Research's Faculty Research Grant Program at the University of California, Santa Barbara; the Academic Senate Faculty Research Grant Program at the University of California, Santa Barbara; and the Regents Junior Faculty Fellowship Program at the University of California, Santa Barbara.

One well-known provider of online petitions is moveon.org, which actually began with an online petition opposing the impeachment of Bill Clinton in 1998 that 500,000 people ultimately signed (Bennett & Fielding, 1999; SourceWatch, 2005). MoveOn has since hosted many other petitions, ranging from major petitions, such as a petition against the war in Iraq that garnered 220,000 signatures, to smaller petitions, such as a petition against reactionary violence to the September 11 attacks that collected 30,000 signatures (SourceWatch, 2005).

MoveOn, of course, is not the only web site to employ online petitions. Web sites run by both individuals and large social movement organizations (e.g., National Organization for Women) host petitions on a broad range of topics. A number of petitioning web sites have also been launched during the past few years that offer petition hosting for a broad range of causes and groups. For instance, www.petitiononline.com offers free petition hosting based on a belief that petitioning invigorates democracy. The site boasts of collecting more than 33 million cumulative signatures for tens of thousands of petitions.¹

Petitions are not the only way in which individuals can participate in activism online. Some online forms of participation are quite controversial or even illegal (e.g., denial of service actions). Other forms, which this article focuses on, are more similar to petitions in that they are online adaptations of classic offline social movement tactics, such as online letter-writing campaigns or e-mail campaigns and online boycotts (for ease of notation, this article will refer to these as *tactics*). Web sites hosting letter-writing and e-mail campaigns generally include information about the goal and target of the campaign (e.g., “Write your Senator to oppose coastal oil drilling”) and contact information (i.e., physical or electronic addresses) and sometimes include sample letters. In letter-writing campaigns, web sites may ask visitors to print and mail their own letter, or may have some way of printing and couriering the letter for the visitors. Some e-mail campaigns require that e-mails are sent from personal e-mail accounts, whereas other web sites allow individuals to e-mail the target of the campaign directly from the web site.

Although also a traditional social movement tactic, boycotts are somewhat different from petitions and letter-writing and e-mailing campaigns in that participation in boycotts is ongoing, requiring individuals to avoid transactions with targeted companies or agencies for the duration of the boycott. A typical site hosting a boycott would include information about what entity is being boycotted—which could include online stores (e.g., amazon.com) or offline companies (e.g., Coca-Cola)—and why (e.g., poor environmental records, poor labor practices). Some of these web sites allow site visitors to record their participation, thereby producing a count of boycott participants, whereas other web sites do not track participation.

Despite the obvious variety of such online opportunities to participate in activism, these tactics have not been the central focus of prior research.² Petitions and the occasional e-mail or letter-writing campaign have been mentioned by a few analysts in their discussion of specific movements (Gurak, 1997, 1999; Gurak & Logie, 2003; Leizerov, 2000), but scholars have not focused their analytic attention on these tactics. Boycotts have received even less attention.

This article addresses this gap in existing research by examining the online use of three traditional protest tactics—petitions, boycotts, and letter-writing campaigns—and one 21st century variation on a traditional protest tactic—e-mail campaigns. These four tactics were chosen as the focus of research for several reasons: (a) each has a clear lineage in offline activist tactics, which simplifies its identification online; (b) all four tactics are expected to be sufficiently prevalent online, offering ample cases for study (and across a large enough sam-

ple of cases, ample variation to identify trends and test explanations); and (c) the four tactics are expected to vary from one another in ways that allow for helpful scholastic contrasts. For instance, these tactics can vary in technical complexity and in the extent to which participation in them can be completed online (i.e., people can often participate in petitioning and e-mail campaigns entirely online, whereas letter-writing campaigns and boycotts often fuse online and offline activities).³

In addition to making an important contribution by studying these underanalyzed empirical phenomena, this article also adopts an innovative methodology that generates a population of reachable web sites that discuss each of the four featured tactics, which can then be randomly sampled when the population is large.

Using this methodology, the article addresses two other significant drawbacks in prior research. First, scholars interested in what is online, versus who is online, have generally relied on nonprobability sampling techniques (e.g., snowball samples of web sites or organizations operating web sites; e.g., Ayres, 1999; Earl & Schussman, 2003, 2004; Fandy, 1999; Fisher, 1998; Garrido & Halavais, 2003; Gurak & Logie, 2003) and have tended to study large, popular web sites and web sites owned by large, well-known organizations.⁴ Because of this, scholars lack data on a population of web sites, or data on a random sample of web sites, that would allow them to confidently generalize or contextualize their findings at a population level.⁵ The method employed here provides population-level estimates and adds value to existing and future research by allowing researchers to contextualize their findings within a population.

Second, social movement scholars who are interested in offline activism have recently observed the extent to which social movement tactics have become institutionalized through their incorporation in the daily life of many Western democracies (Soule & Earl, 2005). This literature discusses the growth of “movement societies” in which social movement tactics diffuse throughout society and are adopted for purposes far removed from traditional uses of these tactics. This may also be happening online, but the way in which many scholars study activism would obscure that trend because researchers commonly use social movements (or causes more generally) as the point of origin in research on the Internet and contention, as is evident by research on the Zapatistas (e.g., Garrido & Halavais, 2003; Martinez-Torres, 2001; Wray, 1999), antiglobalization efforts (e.g., Ayres, 1999; Eagleton-Pierce, 2001; Van Aelst & Walgrave, 2002), the labor movement (Cloward & Piven, 2001), and the lesbian, gay, bisexual, and transgender movement (Nip, 2004). This focus on particular movements ignores reappropriations, or repurposing, of classic social movement tactics.

Because the web sites examined in this article were identified based on the tactics they offered or directly linked to, not their movement affiliation, it is possible to study the uses of petitions, letter-writing and e-mail campaigns, and boycotts across a broad range of situations, by a wide spectrum of actors, and without respect to whether the tactics are tied to traditional social movement causes or actors.⁶ This shift of focus is important because it allows scholars to study what people actually do online as opposed to how the Internet is used by specific movements.

This article begins this exploration by addressing first principal questions about the fundamental structural properties of web sites that host and directly link to the four featured protest tactics. These structural characteristics map out elemental characteristics of web sites, which together allow scholars to understand the geography of online opportunities to participate in common forms of online activism. Specifically, this article addresses five basic structural

questions: (1) Are opportunities to engage in the tactics examined here usually organized around social movement organizations and/or actors? (2) Do sites tend to host or link to the four tactics examined here? (3) On average, how tactically specialized or tactically diversified are sites? (4) How was each tactic distributed across different types of sites? and (5) How many implementations of each tactic were offered per web site?

Data and Method

To study a wider array of online opportunities for activism, this project generates populations of reachable web sites that host or directly link to online petitions, boycotts, and letter-writing and e-mailing campaigns and draws random samples from these populations when the population size is large. Of course, together these populations, and any samples drawn from them, do not amount to an investigation of every form of protest or activism on the Internet, but the thorough examination of these four tactics nonetheless leads to important findings.

Five populations are initially generated: (1) a population of what this article refers to as “warehouse sites,” which are sites that host many implementations of tactics and are often independent of particular causes or social movements (e.g., www.petitiononline.com); (2) a population of nonwarehouse sites that host or directly link to petitions; (3) a population of nonwarehouse sites that host or directly link to letter-writing campaigns; (4) a population of nonwarehouse sites that host or directly link to e-mail campaigns; and (5) a population of nonwarehouse sites that host or directly link to boycotts.

Populations of warehouse sites were generated separately from populations of nonwarehouse sites for several reasons. First, exploratory analysis indicated the existence of two broad types of sites: (a) large web sites that often specialized in a particular tactic, which I refer to as warehouse sites because they served as clearinghouses for such things as petitions (e.g., www.petitiononline.com) and (b) web sites that specialize in a particular cause or set of causes, which I refer to as nonwarehouse sites for ease and clarity (e.g., www.amnestyusa.org). Initial investigations revealed that a small minority of warehouse sites were up to orders of magnitude larger than most nonwarehouse sites. For example, www.petitiononline.com housed thousands of petitions. Yet, in terms of the number of web sites, as opposed to the number of implementations (i.e., deployments) of each tactic, there were relatively few warehouse sites.

Failing to distinguish between these types of sites while generating populations would have had negative repercussions. Most importantly, because there were relatively few warehouse sites (ultimately only 15), it is likely that samples drawn from combined populations of warehouse and nonwarehouse would have sampled 0 to 2 warehouse sites. Furthermore, because it was likely that warehouse sites differed from nonwarehouse sites in elemental ways, to compare warehouse and nonwarehouse sites, it was necessary to gather data on all warehouse sites to have enough data for comparisons.

The process of generating each of the five populations of reachable web sites began with an automated programming interface (API) with Google.⁷ The API initiated searches in Google and saved data on the first 1,000 results for each search. Search strings were pretested for breadth and accuracy, during which it was determined that noun-verb combinations produced optimal results (e.g., sign and petition, join and boycott) and that common variations

Table 1
Search Strings and Results From Google Searches

	Petitions	E-Mail Campaigns	Letter-Writing Campaigns	Online Boycotts
Number of search strings	16	16	20	8
Number of URLs identified in searches	15,979	15,988	19,993	7,994
Number of unique URLs identified ^a	10,551	8,183	8,387	6,745
Number of unique URLs that did not include news or media identifiers in URL	8,673	6,762	7,338	5,210
Number of URLs included in the 10% random sample	868	677	734	521

a. In addition to excluding duplicated URLs, this number also excludes URLs whose syntax was improper and therefore were now unreachable, URLs that were clearly hosted on non-U.S. servers (based on their URL), and government URLs.

of each term were required (e.g., sign and signing, petition and petitions) for exhaustive searching. The Google searches for data presented in this article were run in March 2004.

Warehouse sites were identified using these searches by examining any site that appeared more than 40 times in the results from Google queries. If, on inspection, the site was found to be a warehouse site, the site was added to the warehouse population list, and the domain was excluded from Google searches for nonwarehouse sites. Because there were so few warehouse sites—only 15 hosted on U.S. domains—the list was validated using comparisons with news articles and online directory services. Because of the small *N*, warehouse sites were not sampled; analyses below use the entire population.

The nonwarehouse populations were generated by concatenating all search results (excluding warehouse sites) for each tactic, thereby creating the most comprehensive list possible. Concatenated search results were then cleaned to remove duplicates and to remove web sites that were obviously news sites likely to be reporting on, but not hosting, an implementation of a protest tactic (e.g., *cnn.com*, *latimes.com*, etc.). The resulting populations for each tactic on nonwarehouse sites were so large that they were randomly sampled, using a 10% sampling rate. Table 1 shows the number of search strings per protest tactic and the number of unique results for nonwarehouse sites.

Using Google to Generate Populations

Google was selected as the basis for generating each population because it is the world's most extensive, searchable, and publicly accessible database of URLs (Jarboe, 2003). Although Google does not contain all URLs for all web pages on U.S. Internet domains, it does represent the most extensive catalog of web sites available and therefore offers the best approximation of a population list of relevant web sites. Another important reason for relying on Google is the algorithm it uses to identify web pages: Googlebot is Google's web crawler (also known as a spider), and it identifies new sites by traversing links from already identified sites. This means that Google is most likely to find sites that are linked to other sites but unlikely to find structurally isolated sites. This is relevant because searching Google mimics the two processes by which web site visitors identify web sites: (a) using a searchable index of web sites, such as Google, or (b) following links from a known site, which Googlebot does already (Hindman, Tsioutsoulouklis, & Johnson, 2004). Thus, not only does Google offer the

most extensive, publicly available, searchable catalog of web pages, it captures the pages most likely to be identified by users. This suggests that, to the extent that Google does not itself represent a population of web pages, it represents the best approximation of a population of reachable web sites, assuming that a user does not begin with a URL that was personally provided to them.

The major drawback to using Google is that the API is limited to retrieving the first 1,000 results to any query. However, this project was able to build much more extensive sets of unique URLs on particular subjects by varying search terms and appending the results of consecutive searches to one another. That is, the use of multiple search terms attenuated the effects of Google's limitation on results after the 1,000th identified page because pages that were close to the 1,000th result in one search were likely to be pulled into the first 1,000 results across at least one other search. Given that, only very weak matches were entirely missed because they failed to be in the first 1,000 results of any of numerous searches. To validate this, nonautomated draws from search results beyond the 1,000th result were inspected; those inspections confirmed that only a negligible number of URLs after the 1,000th cut-off were of interest to the study.

Another potential drawback to Google is that the ranking (i.e., order) of search results can be manipulated. However, this manipulation is generally done in the hopes of securing a very high rank, such as the first listed web site in a set of results or a result on the first page of listed results. Such manipulation is not thought to be used to push a site from the 950th result to the 900th result. Given the desire to minimize any artifacts because of manipulated page rank, this project ignores the relative rank of search results by concatenating all results without concern for relative page ranks (except with respect to the limitation regarding results after the 1,000th result).

Mirroring Selected URLs

Once sites were selected into the analysis (i.e., all warehouse sites and sampled non-warehouse sites), the web sites had to be archived. Sites were mirrored (i.e., downloaded and saved into local files for archiving and later examination) using a series of computer scripts and freely available mirroring software. The mirroring process honored "robot" exclusions posted to servers' robots files and also included, as a courtesy, 30-second delays between requests to the same server to reduce the bandwidth required for mirroring. Mirroring took place across 4 weeks in March and April of 2004, during which tens of thousands of pages were mirrored.

Content Coding

An examination of local copies of sites revealed that text involving the four protest tactics ranged from being irrelevant to protest (e.g., legal documents titled *legal petitions* instead of *protest petitions*), to news reporting on protest tactics, to encouraging the use of a tactic without providing any means to participate (or even a link to a means), to linking to an implementation of one of the four tactics, to actually hosting one of the tactics. Because this article focuses only on sites that hosted or directly linked to one of the four featured tactics, content coders assessed whether or not the site (a) hosted one of the four featured tactics (the last row of Table 2 for nonwarehouse sites) or (b) had a direct link to a site on another domain that hosted one of the four featured tactics (the second to last row of Table 2 for nonwarehouse

Table 2
URLs Identified in 10% Random Samples of Nonwarehouse Web Sites

	Petitions	E-Mail Campaigns	Letter-Writing Campaigns	Online Boycotts
Number of URLs included in the 10% random sample	868	677	734	521
% of missing URLs	6	3	3	7
% of irrelevant URLs	11	82	45	10
% of URLs that were news or historical reports with no link to take action	55	4	32	66
% of URLs that were news or historical reports with link to take action	2	0.2	1	2
% of URLs that did not have a unique author (e.g., billboards or listserv archives)	13	5	7	8
% of URLs that appealed for action without providing a link to take action	2	1	2	0
% of URLs that appealed for action and provided link to a tactical implementation on another web site	3	0.3	1	0
% of URLs that appealed for action and provided access to a tactical implementation on the site	8	5	8	7

Note: Total percentage may not be 100 because of rounding error.

sites).⁸ The tactic was hosted if the site allowed visitors to participate. Coders coded the site as linking to the tactic, instead of hosting it, if necessary elements (i.e., contact addresses in a letter-writing campaigns) were located on a different domain from the coded site.⁹ Furthermore, the link had to directly connect surfers to the protest implementation, not to a general information page of another web site that may or may not have hosted such a tactic. For instance, if a link saying it was for a human rights petition actually sent surfers to the general Amnesty International home page, instead of directly to the petition page, that link was not coded because the link did not directly connect to an opportunity to participate. Table 2 shows results from this preliminary coding for nonwarehouse sites. All 15 warehouse sites either hosted or directly linked to a protest tactic.

Sites not coded as hosting or directly linking to one of the four featured tactics were eliminated from the study.¹⁰ This means that sites that encouraged participation in offline (i.e., street) protest events, but did not discuss online protest events, were not coded further. The coding rules also meant that if a site discussed online protest using only tactics other than the featured tactics, the site would not be coded. But, when a site discussed one of the four featured tactics, any information about other kinds of activism was coded. In all, depending on the type of tactic examined, between approximately 8% and 12% of the original 10% sample of nonwarehouse sites met these requirements and were therefore retained in the study; 100% of warehouse sites met these requirements and were retained in the study. In raw counts, 169 nonwarehouse sites were retained, and all 15 warehouse sites were retained.

Sites that were retained in the study were then coded further using a more detailed instrument that recorded information on broad characteristics of the site, such as how tactics were related to specific sites, the causes or claims that were made on sites, and the range of organizations mentioned on the site.¹¹ For the purpose of this article, two particular coding ques-

tions were important: (a) For each tactic, how many implementations of that tactic were hosted on the site? and (b) For each tactic, how many implementations of that tactic were directly linked to from the site (using the above coding rules for hosting vs. direct linking)? For example, a web site might host two separate petitions, but no boycotts, and directly link to one letter-writing campaign and directly link to a different e-mail campaign. The coding values for this site would be 2 hosted petitions and 0 linked petitions, 0 hosted and linked boycotts, 0 hosted and 1 linked letter-writing campaign, and 0 hosted and 1 linked e-mailing campaign. The analysis below examines these distributions from a range of different standpoints.

Describing Online Opportunities to Engage in Activism

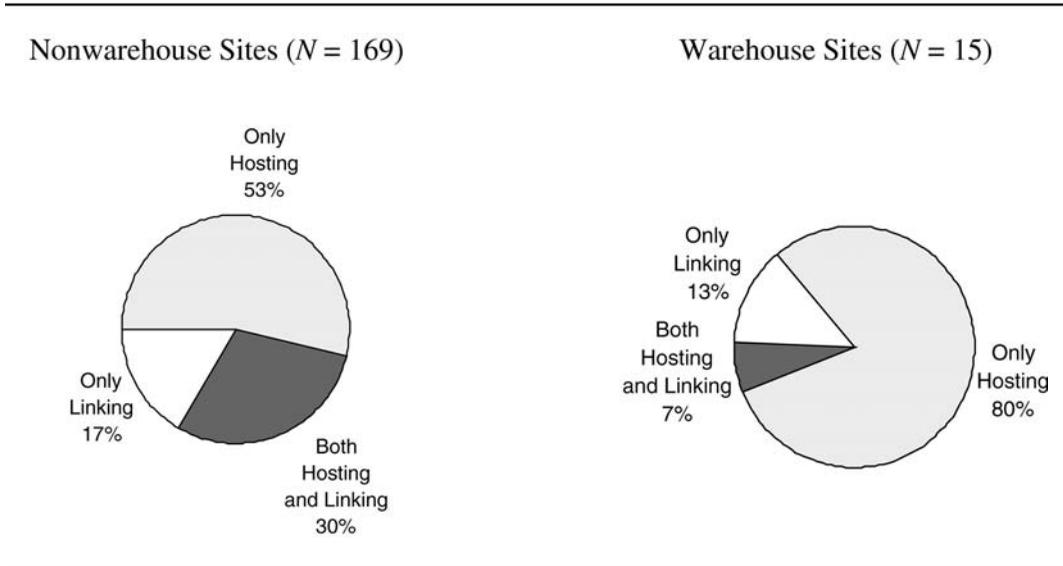
The article addresses five basic, structural questions about the distribution of four tactics across web sites: (1) Are opportunities to engage in the tactics examined here usually organized around social movement organizations and/or actors? (2) Do sites tend to host or link to the four tactics examined here? (3) On average, how tactically specialized or tactically diversified are sites? (4) How was each tactic distributed across different types of sites? and (5) How many implementations of each tactic were offered per site?

(1) Are Tactics Organized Around Social Movement Organizations and/or Actors?

As discussed above, much of the existing literature assumes that all tactics will be clustered around movements and, more particularly, clustered around major movement web sites. Findings here suggest that this prior research is correct in one respect: There are far more nonwarehouse sites that host tactics than there are operational warehouse sites. The entire population of warehouse sites was 15, and as expected, these sites tended to explicitly identify themselves through their tactical specialization. For instance, on its home page www.thepetitionsite.com declared that it was a “non-partisan organization, dedicated to providing you a voice to the world.” Observed petitions ranged from common political causes, such as a petition for habitat preservation, to less political petitions, such as a petition that attempted to establish that a particular band was loathed by music lovers. In contrast, the four samples of nonwarehouse sites identified more than an order of magnitude more sites hosting tactics (i.e., 169).

But, when viewed in terms of the number of tactics, not the number of sites, findings show there are far more tactics housed on warehouse sites than nonwarehouse sites: The 15 warehouse sites offered an estimated 44,292 tactical implementations, whereas the 169 nonwarehouse sites sampled only offered an estimated 1,726 tactical implementations. Even accounting for the 10% sampling of nonwarehouse sites versus 100% sample (i.e., population) of warehouse sites, the distribution of actual tactical implementations is still weighted heavily to warehouse sites. This distribution is a result of the much larger size of a few warehouse sites.

Figure 1
Distribution of Sites Hosting and/or Linking to Tactics



(2) Do Sites Tend to Host or Link to the Four Tactics Examined Here?

As Figure 1 shows, three combinations of hosting and linking were possible: (a) sites could host tactics without having outbound links to any tactics, (b) sites could host tactics and contain outbound links to tactics, and (c) sites could have only outbound links to tactics. Understanding the distribution of cases across these groupings is important to understanding how sites and tactics relate to one another. For instance, if tactics are very difficult to produce, one would expect that only a few “hub” sites would host tactics, and these hub sites would benefit from a large number of inbound links coming from “spoke” sites. This would also mean that a small number of hub sites would control the majority of opportunities to engage in particular tactics online. Data on sites that hosted tactics (i.e., both sites that only hosted tactics and sites that hosted and linked to tactics) show that no general hub and spoke architecture exists. As Figure 1 shows, 83% of nonwarehouse sites hosted at least one online implementation (i.e., hosting only, and both hosting and outbound links), and 87% of the 15 warehouse sites hosted at least one online implementation.¹² Further, in both cases, the majority of sites only hosted tactics: 53% of nonwarehouse sites and 80% of warehouse sites. It appears that the political and social power that online tactics represent is as distributed as the computing power that underlies the Internet.

Two alternatives to a hub and spoke system are a web-like system (i.e., a large proportion of sites had outbound links to tactics) and an island-like, or more isolated, system (i.e., there are few outbound links connecting sites that have tactics). The data show that nonwarehouse sites are moderately web-like, whereas warehouse sites are more island-like. As shown in Figure 1, 47% of nonwarehouse sites contained at least one outbound link to an online protest tactic (i.e., only linking, and hosting and linking), whereas only 20% of warehouse sites contained at least one outbound link to an online protest tactic. But only 17% of nonwarehouse

sites only had links, meaning that most of the web-like structure came from sites that both hosted and linked to tactics (30%). This was not true for warehouse sites, where the small amount of interconnection between sites came from two warehouse sites (13%) that only provided outbound links and one site (7%) that both hosted and linked to tactics.

(3) On Average, How Tactically Specialized or Tactically Diversified Are Sites?

Given that nonwarehouse sites tend to be cause oriented, one might expect that these sites would specialize in a cause but offer diverse tactics in support of that cause. In contrast, one would predict that warehouse sites would be more specialized tactically because domains such as `www.petitiononline.com` are committed to tactics, not causes. However, the data show that, in practice, both warehouse sites and nonwarehouse are fairly tactically specialized, although that specialization is certainly more pronounced for warehouse sites. Warehouse sites that hosted any tactics (and may or may not have also contained outbound links) internally hosted an average of 1.3 ($SD = 0.75$) different types of tactics, with an observed maximum of 3 types of online protest. This number was pulled upward by two sites. In fact, the median and mode for number of types of tactics was 1 for warehouse sites. But nonwarehouse sites were also fairly tactically specialized, contrary to expectations: Nonwarehouse sites that hosted tactics hosted an average of 1.9 different kinds of tactics ($SD = 0.96$; $Mdn = 2$).

Given this unexpected specialization by nonwarehouse sites, is it possible that that these sites diversified their tactical offerings through their outbound links? The answer is no. Nonwarehouse sites had even more tactically specialized outbound links: The average nonwarehouse site only linked to 1.33 different kinds of tactics ($SD = 0.71$). This low value was pulled upward by a small number of sites; the median number of outbound links, which is not sensitive to the skewed distribution, was only 1 type of tactic. In contrast, despite their greater specialization where hosted tactics were concerned, warehouse sites actually diversified somewhat through outbound links. Of the three warehouse sites that had outbound links, one site linked to only 1 type of tactic, and the other two sites linked to 4 different kinds of tactics.

(4) How Was Each Tactic Distributed Across Different Types of Sites?

Table 3 addresses this question for nonwarehouse sites. The table first breaks nonwarehouse sites into the three groupings introduced in Figure 1: sites that only host tactics, sites that only have outbound links to tactics, and sites that both host and have outbound links to tactics. For each grouping, the table reports the percentage of those sites that host or link to a tactic, as specified in the row header. For instance, according to Table 3, of the 91 nonwarehouse sites that only host tactics, 29% hosted at least 1 petition.

In terms of hosted tactics, the data show that letter-writing is very popular on nonwarehouse sites: 58% of nonwarehouse sites that only host and 58% of nonwarehouse sites that both host and link had at least 1 hosted letter-writing campaign. E-mail campaigns were the second most popular hosted tactic on nonwarehouse sites (37% of hosting sites had at least 1, 52% of sites that both hosted and linked had 1). Boycotts and petitions were relatively less popular on nonwarehouse sites: between 26% and 30% of sites from different groups

Table 3
Hosting and Outbound Links on Nonwarehouse Sites

	Sites That Only Host	Sites That Host and Link	Sites That Only Link
Number of sites	91	50	28
Sites hosting at least one petition (%)	29	26	—
Sites linking to at least one petition (%)	—	62	93
Sites hosting at least one letter-writing campaign (%)	58	58	—
Sites linking to at least one letter-writing campaign (%)	—	22	29
Sites hosting at least one e-mailing campaign (%)	37	52	—
Sites linking to at least one e-mailing campaign (%)	—	18	18
Sites hosting at least one boycott (%)	26	30	—
Sites linking to at least one boycott (%)	—	4	0

Note: The denominators for percentages are the number of sites shown in the first row of the table. Also, although the coding manual included codes for additional protest forms, protest forms that never appeared in the data are not shown in this table.

hosted 1 of these tactics. In stark contrast, petitioning was the most common hosted tactic on warehouse sites: 8 out of 12 warehouse sites that hosted tactics had a petition. The next most common hosted tactic was boycotting: 3 of 12 warehouse sites hosting tactics had a boycott. Hosting letter-writing or e-mail campaigns was unpopular on warehouse sites (only 1 of 12 hosting warehouse sites for either tactic). Thus, warehouse and nonwarehouse sites are almost reverse images of one another in terms of hosting: Hosting letter-writing campaigns was frequent on nonwarehouse sites, but rare on warehouse sites; hosting petitioning was rare on nonwarehouse sites, but common on warehouse sites. Further, these findings suggest that a much higher percentage of warehouse sites were able to implement more technically complex tactics such as petitioning. Returning to the first question briefly, not only do warehouse sites host and/or link to more tactics, they are also hosting the most technically complex tactics.

The results for outbound links show different patterns. Although hosting letter-writing campaigns was very prevalent on nonwarehouse sites, petitioning was more popular where linking is concerned. Of nonwarehouse sites with links, 93% linked to an offsite petition. Revisiting the second question (see above), this finding suggests that although there is no general hub and spoke structure, there is a hub and spoke structure for petitioning. This finding fits with existing work on online activism that suggests that when the technical aspects of a tactic are difficult, sites commonly link to a small number of tactics instead of hosting the tactic (Schussman & Earl, 2004). The frequency of outbound links from nonwarehouse sites to other types of tactics was low: 29% of linking-only sites and 22% of both hosting and linking sites linked to at least 1 offsite letter-writing campaign, 18% of both groups of nonwarehouse sites linked to at least 1 e-mailing campaign, no sites that only linked to tactics had a link to a boycott, and only 4% of sites that both host and have outbound links had an outbound link to a boycott.

As noted earlier, few warehouse sites tended to have outbound links (only 3 such sites). Of those 3 sites, 1 site both hosted and linked (and its outbound links were to petitions and e-mail campaigns), and 2 sites only had outbound links (and their outbound links were to petitions and e-mail and letter-writing campaigns). The only clear pattern was that no warehouse site

contained outbound links to boycotts. When seen in light of the above findings on boycotts, it seems that boycotts are generally an unpopular tactic, whether one is discussing hosted tactics, linked tactics, warehouse sites, or nonwarehouse sites.

(5) How Many Implementations of Each Tactic Were Offered Per Web Site?

The answer to this question is not many. Sites tended to only offer 1 or 2 implementations of each tactic when they offered the tactic at all, with only 3 exceptions (i.e., nonwarehouse sites' outbound links to boycotts, warehouse sites' hosted petitions, and warehouse sites' hosted boycotts). The percentile breakdowns for numbers of implementations per tactic offered (i.e., the percentiles exclude zeros, so that the focus is on frequency when offered) show this clearly. For nonwarehouse sites, at least 80% of sites that hosted petitions or e-mail campaigns hosted only 1 to 2 petitions and e-mail campaigns (i.e., the 80th percentile for each was 2), at least 70% that hosted letter-writing campaigns hosted only 1 to 2 letter-writing campaigns, and at least 90% that hosted boycotts hosted no more than 1 boycott. For nonwarehouse sites that linked to petitions, at least 70% only linked to between 1 and 2 petitions. When sites linked to an e-mail or letter-writing campaign, at least 80% only linked to between 1 and 2 campaigns. Boycotts were higher, but results must be interpreted with caution because only 2 sites linked to boycotts (one site linked to 1 boycott, and another linked to 22 boycotts).

For warehouse sites, the results for letter-writing and e-mailing campaigns were similar to the findings for those tactics on nonwarehouse sites: The 2 sites that hosted e-mail campaigns offered 1 and 2, respectively, and the sole site that hosted a letter-writing campaign only hosted 2 such campaigns. As mentioned above, hosted petitions and hosted boycotts were exceptions. For warehouse sites hosting petitions, 22% (i.e., 2 sites) of the 9 sites hosting petitions hosted fewer than 10 petitions, another 22% hosted more than 10 but less than 100, and the remaining 5 sites hosted between hundreds and tens of thousands of petitions. Hosted boycotts were also exceptional in their frequency when hosted: the three warehouse sites that hosted boycotts hosted 16, 50, and 575 boycotts, respectively. These trends were repeated in less exaggerated ways for outbound links from warehouse sites. There were few outbound links to e-mail or letter-writing campaigns: The 4 warehouse sites containing outbound links limited themselves to 1 to 2 links to e-mail and/or letter-writing campaigns. The 2 warehouse sites that had outbound links to petitions linked to 2 and 100 petitions, respectively. The only place where trends from the hosted warehouse results were not repeated was with outbound links to boycotts because no warehouse sites contained outbound links to boycotts.

Discussion

These results have several important implications. First, the answer to the article's first question showed that a large number of tactics are hosted by warehouse sites, relative to traditional, cause-oriented sites, suggesting that much is missed by common research strategies designed to detect only activism organized and sponsored by social movement actors and organizations. Orienting its research design to tactics allowed this article to study an empirically large, but generally ignored, set of opportunities to engage in online activism.

The answer to the second question—which involved the extent to which sites had hub and spoke, web-like, or island-like relations with other sites—suggests that online tactics are distributed across a large number of sites. This might have important implications in terms of potential repression in that even if authorities or private actors targeted a specific site for repressive treatment, online tactics are distributed enough that this would not be likely to have a large impact on online activism. This possibility is similar to how people have responded to censorship online, with prominent observers noting that the distributed architecture of the Internet allows individuals to route around censorship.

The answer to the third question showed that sites were relatively tactically specialized, including nonwarehouse sites where greater diversity had been anticipated. This suggests that cause-oriented sites do not embrace the widest variety of online tactics possible, which may limit their mobilization efforts. Future research should attempt to explain this.

The fourth question addressed which types of tactics tended to be hosted and linked to, finding that warehouse and nonwarehouse sites tended to be reverse images of each other. When combined with findings for the first question, this finding suggests that not only are large numbers of tactical implementations being offered on sites that scholars do not usually study (see the first question above) but that the kinds of tactics commonly offered on these sites are systematically different from the tactics hosted and linked to from sites that are commonly researched, thereby amplifying any effects of this scholarly inattention.

Finally, the answer to the fifth question suggests that frequently sites hosted and linked to only a few implementations (1-2) of each tactic. This is surprising because once one tactic has been successfully implemented, subsequent implementations of that tactic should be marginally less costly to launch. Yet, sites do not seem to be capitalizing on their sunk costs by producing many implementations of the same tactics. Linking to additional tactics run on other sites should be even less costly. Future research should investigate this issue because many alternative explanations, such as a desire to focus user efforts on highly prioritized issues, are conceivable.

Conclusion

This article approached research on online activism from a fundamentally different vantage by studying four opportunities to act online—petitions, letter-writing and e-mailing campaigns, and boycotts. By doing so, this article was able to empirically examine prevalent forms of online activism that have not received needed scholastic attention. Further, the way in which this article approached this issue allowed findings across a range of different movements and a range of political and less political causes, with the capacity to make population-level estimates. Because the tactics this article studied have not been the focus of prior research, this article asks and answers five questions about fundamental, structural properties of web sites and their relations to specific tactics. In addition to mapping these basic structural properties, which is important by itself, the discussion section also indicated the relevance of these structural properties to scholars' further investigation and understanding of online activism.

This article also breaks new ground by pioneering a scalable method for generating the best approximations of reachable populations of web sites on different topics and then randomly sampling from those populations when the populations are large. Although the method was used here to address activism online, researchers interested in any type of online

content could use this technique, given the generation of appropriate search strings for new topics of study.

This article also opens new questions up to researchers. For instance, future research should examine the extent to which the structural properties outlined here are stable or dynamic over time. Methodologically, this interest in longitudinal change would require researchers to resolve issues about how to collect and analyze changes in web site content over time and how to accommodate and study the closure of web sites and launching of new web sites over time. This article presents results from a cross-sectional study, but future research should collect and analyze panel data or cross-sectional time series data.

Notes

1. Although scholastic treatments of the effectiveness of such online mobilizations do not exist and a number of methodological issues make it difficult to determine the effects of specific mobilizations (Earl, 2000), this is an important area for future inquiry. For now, it is sufficient to note that although millions of people are participating in these online tactics, few scholars are studying such tactics.

2. This is not to suggest that researchers have not been interested in, or made progress toward understanding, other forms of online activism. Interested readers should consult Ayers (2003), Brunsting and Postmes (2002), Gurak and Logie (2003), McCaughey and Ayers (2003), Myers (1994), and Peckham (1998).

3. Future research should, of course, expand the array of tactics that are studied, but restrictions on the number of tactics in this study allow for more intense investigation of each tactic.

4. There are probabilistic surveys of Internet users (and nonusers) that examine who is online (Best & Krueger, 2004; Rice & Katz, 2004) not what is online. Existing data on populations or probabilistic samples of what is online, such as Smith's (1999) study of a population of USENET postings, are rare, and even in such cases, web site content is not being studied.

5. Prior work using case studies and snowball samples have clearly advanced the scholastic understanding of the Internet and activism. Even still, such studies are particularly helpful when other research can be used to assess the uniqueness or ubiquity of the cases being examined.

6. Because such a broad range of tactical implementations are examined, it might be more appropriate to label these tactics as examples of online collective action of which some are members of a social movement subset.

7. The automated program interface used a PERL script (written by Alan Schussman) that managed an automated interface with Google and stored results in a local database. The interface allowed advanced search options, which were set to exclude non-English pages, pages hosted on non-U.S. domains, and domains located and tracked as warehouse sites (see below for details), to be used in Google. These restrictions are not inherently necessary in the search process but were necessary given resource constraints on coding. Future research should relax these assumptions.

8. Coders were instructed to label the site as fitting into one of the categories listed in Table 2. For the purpose of this table, when a site hosted and linked, it is counted in the hosting row.

9. Some sites coded as linking directly contained discussions of the tactic in addition to outbound links to the tactics, but these discussions were so cursory that users would have to follow the outbound link to participate.

10. As is evident from Table 2, the procedure captures a wide swath of different kinds of URLs discussing protest, which is excellent for projects wanting to collect data on any discussion of particular protest tactics. However, for the purposes of this project, the sample was not as efficient as would be desired such that most sampled pages did not invite and allow participation. Future refinements in the technique should focus on increasing the efficiency of samples. Other projects using automated search and retrieval of web pages have also faced problems with efficiency (Hindman, Tsioutsoulklis, & Johnson, 2004).

11. Intercoder reliability tests were conducted frequently during the initial phase of coding and were conducted twice during the detail coding phase. Tests results revealed high levels of consistency between coders, although a few particular items were inconsistent and were thus excluded from analysis. As well, when the data collection process was complete, all data sets were programmatically checked for unallowable values, logically inconsistent relationships between different variables' values, and other sources of error.

12. Not all of the coded online tactics were featured tactics because a site could be selected into the sample based on a linked featured tactic but then also contain an internal online tactic that was not one of the four featured tactics. Faxing, for instance, was a common online tactic in which users were told to enter information so that a fax could be sent on their behalf. Whenever faxing was an option for participation, it was coded, but a separate population of web sites discussing faxing was not created and sampled.

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