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Watching From Afar: Media Consumption Patterns Around the Arab Spring

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Abstract

Uses of new media in the context of the Arab Spring have attracted scholarly attention from a wide array of disciplines. Amid the anecdotes and speculation, most of the available empirical research in this area has examined how new media have enabled participants and spectators to *produce* and *circulate* protest-related content. In contrast, the current study investigates patterns of *consumption* of Arab Spring–related content using a unique data set constructed by combining archived Twitter content with metadata drawn from the URL shortening service Bit.ly. This data set allows us to explore two critical research questions: First, were links posted to Twitter (among other platforms) followed primarily by individuals inside the affected country, within the broader Middle East and North Africa (MENA) region or by those outside the region and country? And second, who attracted more attention online: protesters and other nonelite citizens or traditional news organizations? Our findings suggest that the vast majority of attention to Arab Spring content came from outside of the MENA region and, furthermore, that mass media, rather than citizen media, overwhelmingly held the world's attention during the protests. We thus conclude that Twitter was broadly useful as an information channel for non-MENA onlookers but less so for protesters on the ground.

Keywords

social movements, twitter, Arab Spring

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What role did new media play in shaping information flows during the Arab Spring of 2011? It is frequently assumed that the Internet represented a decisive new variable that facilitated the sudden explosion of popular protest across the region. This popular belief relies on often-unstated assumptions about when and how collective action occurs and how new tools for disseminating information and for communication might change the parameters of such collective action.

The debate about the actual role of new media in the Arab uprisings has until recently focused on conceptual issues and sweeping claims. Some analysts, for instance, have argued that new media played a crucial role in providing new forms of information to mass publics, which then mobilized them to act. Others focused on how small groups of activists used the new media for internal communication, coordination, and organization. Still others highlight the indirect effects of new media, such as the provision of video, narrative frames, or information to mass media or governments. And then, of course, there are analysts who heavily discount the role of the new media in the uprisings, emphasizing instead more traditional factors, such as material grievances, movement organization, or political opportunities.

These debates have gone about as far as they can go in the absence of relevant data to adjudicate among their competing claims. There has been some progress toward collecting and analyzing such data, with extensive data sets of new media content, such as blog posts, chat room traffic, and tweets, being used to address specific questions. But these data sets almost exclusively focus on the *production* of information: how many tweets include particular hashtags, the timing of online versus mainstream media attention to particular events, and so forth. Data sets that systematically capture new media *consumption* are less common.

This article advances the research agenda on the role of new media by generating and analyzing a unique data set that captures the consumption rather than the production of information. To be sure, simply measuring consumption cannot reveal whether new media content actually affected political attitudes and behavior, such as protest participation. But consumption is a necessary step in the chain of influence. We use a large data set provided by the URL shortening service Bit.ly to capture the ways in which information was disseminated across the national, regional, and international levels during the Arab Spring.

These data offer a unique window into the questions about the impact of a key new media channel, Twitter, on the Arab uprisings. Our data can reveal in considerable detail which content was shared as well as when, where, and how many times it was viewed. This provides us with a unique vantage point on the flow of information, one that allows us to assess the plausibility of possible mechanisms through which new media may have flowed and thereby affected politics. For example, evidence of high levels of information flow and consumption *within* a country experiencing protest renders more plausible the hypothesis that these media may have spurred mass mobilization—even if we cannot establish a contributory relationship between the consumption of new media and participation in demonstrations. If information flows are primarily *outside* of the country experiencing protest, then it strengthens arguments that new media may have been more valuable for communicating information to

external actors and third parties than for communicating information within countries or the region.

Our analysis of the Bit.ly data allows us to offer several provisional conclusions about the key questions about the relationship between the new media and the Arab uprisings. We find that the spikes in attention to Arab Spring protests came largely from those outside of the Middle East and North Africa (MENA) region. We also find that attention to protest activity is highly episodic, suggesting that the new media play a strong role in driving short-term external attention. Although these remain only provisional conclusions, given the limitations of the data and the complexity of the cases, they should lead to a reexamination of some popular assumptions in the literature.

Debates About New Media Influence

The debate about the Arab Spring uprisings is embedded within a complex of wider theoretical debates about how new media might affect political outcomes. Answering this question means defining *new media*. It is an admittedly unsatisfying term that encompasses a diverse array of outlets, such as blogs, "social" media (e.g., Facebook), audiovisual hosting services (e.g., YouTube), text messaging (SMS), Twitter, e-mail, and chat rooms. Although any nomenclature can be challenged, the term *new media* is a convenient shorthand for various primarily Internet-based communication technologies and methods that most people can readily differentiate from the "old" media of print, television, radio, film, and so on. New media generally involve user-generated content, interactivity, and dissemination through networks, but distinct forms of new media differ in their characteristics and potential political consequences. Indeed, perhaps the most important phenomena involve information that appears on multiple platforms.

Existing scholarship has explored many uses of new media in politics, but three of the most relevant for the current purposes are (a) allowing consumers to participate in the process of filtering and publicizing news (gatewatching), (b) reducing the role of traditional media (disintermediation), and (c) facilitating political participation and activism. We briefly examine relevant studies about each of these three roles.

First, new media allow users to select and filter relevant media content in new ways, including via blogs, social network sites, and the ubiquitous "share" buttons that bedizen ad-serving sites across the web. In turn, some argue, new media have eroded the traditional (or old, or mainstream) media's gatekeeping prerogatives—that is, to determine what information audiences do and do not encounter. This was once the exclusive province of professional journalists, news editors, and other "official" authorities (Shoemaker & Reese, 1996), but today, the task of filtering much new media falls in large part to users, who select information to pass on to their friends and followers. Bruns (2003, 2005) labels this behavior *gatewatching*, arguing that it has completely displaced the model of elite gatekeeping (see also Hermida, 2010; Meraz, 2009; Williams & Delli Carpini, 2004).

But the phenomenon of gatewatching does not mean that all users are equal. Some users are more important than others in deciding which content is disseminated and

which is not. Similarly, some content items are more popular than others, sometimes many orders of magnitude more popular. Such implicit hierarchies of influence are evident in links between blogs (Adamic & Glance, 2005; Farrell & Drezner, 2008; Hindman, 2010; Shirky, 2003), numbers of blog readers (Lawrence, Sides, & Farrell, 2010), numbers of Twitter followers (Wu, Hofman, Mason, & Watts, 2011), and other key metrics of influence—all of which display heavily skewed distributions in which a few individuals receive inordinate attention and most do not. These skewed distributions do not determine social influence, but they are surely important. The networked structure of many new media may systematically influence the diffusion of specific items of information among users.

The second debate, about the idea of disintermediation, concerns the relationship between new and old media. Some argue that traditional media content is actually diminishing in relevance and currency in light of the rise of citizen and activist media. This argument takes the collapse of elite gatekeeping as given and predicts that in the resulting open media marketplace, content created and shared horizontally by citizen peers will *disintermediate* traditional media, or eliminate their long-standing role as the primary political intermediary among citizens and between citizens and the state. For example, Castells (2007) describes a concept of digitally mediated "mass self-communication" as "self-generated in content, self-directed in emission, and self-selected in reception by many that communicate with many" (p. 248; see also Castells, 2009). Similarly, Della Porta and Mosca (2005) state that "CMC [computer-mediated communication] differs from the traditional media in that it favours 'disintermediation': movements present themselves directly to the general public with low costs especially facilitating resource-poor actors" (p. 166). Hermida (2010) applies this observation specifically to microblogging, which creates spaces in which "citizens report without recourse to institutional journalism" (p. 300). The general popularity of Twitter (Hermida, 2010), peer-to-peer networks (Castells, 2007), and activist-run information websites (Della Porta & Mosca, 2005) is often cited as evidence of disintermediation. Some empirical studies have also documented significant degrees of citizens linking to other citizens' content relative to traditional media and government sites (Meraz, 2009; Robertson, Vatrapu, & Medina, 2009). Of course, the mere presence of hyperlinks does not guarantee that the messages they point to will be viewed.

Against those who believe that disintermediation is becoming ubiquitous stand those who believe that large media corporations still retain significant capacity to frame political conflicts, notwithstanding the proliferation of citizen media. In this account, disintermediation has not occurred. The citizen media that nonactivist publics see mostly flow through the publication channels of large media organizations, which attach their distinctive frames and biases along the way. Indeed, even social media–equipped gatewatchers may pluck more content from traditional media than from citizen media. In part, this is because traditional media that developed offline—via print, television, and/or radio—also (not surprisingly) tend to garner very large shares of audience attention online (Hindman, 2010). Thus, American political blogs link to traditional media sources significantly more than to one another (Adamic & Glance, 2005; Leccese, 2009; Tremayne, Zheng, Lee, & Jeong, 2006; Wall, 2005; but see

Meraz, 2009) and spend the majority of their time critiquing and opining on traditional media stories (Kenix, 2009; Scott, 2007).

Finally, there is the debate about the consequences of new media for political participation and mobilization. Again, there is disagreement, with some arguing that mobile communications lead to political detachment and a decline in social capital (Wilken, 2011) and others arguing that online political conversations can generate political engagement and participation (Campbell & Kwak, 2011; Hardy & Scheufele, 2005; Price & Cappella, 2002). The discrepancies of interpretation here have several possible causes, including methodological differences, case selection bias, and the failure to take account of key analytical differences between usage types. Empirically, the use of survey data tends to lead to the conclusion that Internet use generally reinforces existing political power arrangements, whereas studies that analyze online content more often find evidence of strong mobilizing influences (Hirzalla, van Zoonen, & de Ridder, 2010). The conclusion that the Internet has failed to make much of a political difference is rooted in part in case selection strategies that privilege long-standing political institutions and traditionally dominant norms of political behavior, such as deliberation (Freelon, 2010; Wright, 2012). Moreover, considering "the Internet" as an undifferentiated medium is problematic in itself, masking the variety of political mobilization forms that occur online (Earl, Kimport, Prieto, Rush, & Reynoso, 2010; Farrell, 2012; see also Earl & Kimport, 2011).

Earl et al. (2010) take up the welcome and long-overdue task of creating a useful typology of online activism that helps to reconcile some of the seemingly incommensurable findings in the empirical literature. They specify four online activism types—brochureware, online facilitation of offline activism, online participation, and online organizing—each of which entails its own particular dynamics of participation and influence. The present analysis of social media's role in the Arab Spring focuses on their potential to facilitate offline activism, as it was ultimately in the streets that the MENA protesters challenged their governments.

New Media and the Arab Spring

All of these debates have implications for the new media's role(s) in the Arab Spring. There is a clear prima facie case for expecting some distinct new media influence. The Arab region experienced an extremely rapid increase in Internet access and social media usage in the years preceding the uprisings, and users of social media played a direct and well-documented role in organizing and publicizing protests in many of the key Arab countries that experienced uprisings. New media content also fairly clearly affected the mainstream media, particularly through the organic connections between online activists and television stations, such as Al Jazeera. That new media have become so deeply integrated into the information ecology of the Arab world both strengthens the case for their impact and makes it more difficult to isolate causal relationships.

Previous research has focused on several particular questions. First, a number of existing studies directly address whether new media led individuals to engage in

protest activity specifically in the context of the Arab Spring. Many have concluded that they were useful to some degree to protesters on the ground (Eltantawy & Wiest, 2011; Rinke & Röder, 2011; van Niekerk, Pillay, & Maharaj, 2011; Zhou, Wellman, & Yu, 2011; but see Hassanpour, 2011; Newsom, Lengel, & Cassara, 2011). Others have argued that new media were important platforms for sharing knowledge about the ongoing events (Eltantawy & Wiest, 2011; Howard et al., 2011; Rinke & Röder, 2011; Russell, 2011; Wall & El Zahed, 2011). But the connection between new media and protest activity remains murky. Internet penetration in Yemen, which has had one of the most sustained and resilient protest movements, is roughly 2%, whereas the Gulf countries, with the highest regional rates of Internet penetration, have experienced little protest. Within Egypt, activists had been trying to ignite a revolution using blogs and Facebook for a decade, with little sustained success. Many protesters in Egypt bristle at the suggestion that their revolution was a "Twitter revolution," emphasizing instead their organization on the ground and physical presence on the streets. In one survey of Tahrir Square protesters, which almost certainly overrepresent users of new media, only 13% named Twitter as a medium used in protest activities (Wilson & Dunn, 2011). In fact, social media were cited less frequently than "old media," such as television (92%) and firsthand communication via live conversation (93%).

A second hypothesis is that the new media may have amplified attention to the Arab Spring outside the region, among international publics not directly affected by the consequences (Howard et al., 2011; Iskander, 2011; Lotan et al., 2011; Lynch, 2011, 2012; Rinke & Röder, 2011; Wilson & Dunn, 2011; Zhou et al., 2011). This amplification can have important political consequences, for example, by helping push outside governments to pressure governments not to retaliate against protesters. One way this happens is via the "boomerang effect" (Keck & Sikkink, 1998), whereby activists in Country A persuade activists in Country B to pressure Country B's government to force Country A's government to listen to Country A's activists, whom the government would otherwise ignore. New media's role as amplifier speaks directly to the debate about the relationship between new and old media and the potential for disintermediation. Initial research on the Arab Spring casts doubt on the extent of disintermediation, arguing that traditional media networks, particularly, Al Jazeera, were central to conveying protesters' grievances to a global audience (Cottle, 2011; Khondker, 2011; Rinke & Röder, 2011; Russell, 2011). Even on Twitter, journalists and activists were echoed more frequently than other actors during Tunisia's and Egypt's revolutionary periods (Lotan et al., 2011). Bloggers also tended to propagate information that originated elsewhere.

A third hypothesis focuses on in-region demonstration and diffusion effects. Where sharing took place across national boundaries, it may have spurred the diffusion of protests from one national context to another. Social media users across the region paid close attention to revolutions in other countries and frequently cited those revolutions as inspirations for their own political activities (Lynch, 2012). The use of hashtags associated with one country by new media users in other countries—for example, Yemenis' use of the Egyptian #jan25 or the Tunisian #sidibouzid hashtag—would offer support for such a hypothesis. So would evidence that protest activity increased or decreased in such countries in response to successes or failures in other closely watched cases.

Expectations

Our analysis and data offer some insights into all three sets of Arab Spring–related hypotheses. The first concerns the levels on which communication between producers and consumers of new media takes place. We distinguish among the national level, within Arab countries experiencing protest; the regional level, within the MENA region; and at the international level, across countries outside the MENA region. Measuring the flow of information across these levels should help to identify the relative significance of different potential mechanisms by which new media can matter.

If Twitter played a major direct role in bringing people out to the streets, we would expect to see substantial flows of information via new media within the countries where unrest occurred. Presumably, this information would provide people with information about the location of protests and lower the perceived costs of collective action by providing individuals with assurance that many others were also taking to the streets. To be sure, a paucity of Twitter content consumption within Arab Spring countries would not necessarily mean that new media were irrelevant to protest activities; for instance, its use by a small core of activists might have been essential but would barely register in aggregate data analysis. Nevertheless, an effect confined to an activist core would be substantially different from the portrait of a "Twitter revolution" wherein tens or hundreds of thousands of protesters are mobilized directly by new media.

If Twitter played a direct role in stimulating protest activity across borders, we would expect to see flows of information about each protest episode to the broader MENA region. If this occurred, it would suggest that mass-level contagion of knowledge was a significant factor. Although one would still have to work out and test the specific mechanisms through which knowledge might translate into political action, one would at least have some assurance that knowledge was being diffused. If, alternatively, there is little detectable flow of political information across national borders, then mass-level contagion is accordingly less likely. Cross-border flows may still matter but in different ways, perhaps through spurring small groups of activists to take action.

If Twitter helped to provide information to the broader international community, then we would expect to see flows of information outside of the MENA region. Again, the mere existence of these flows would not necessarily indicate any specific consequence—such as mobilization on behalf of Arab Spring protesters, either by citizens or governments outside of the region. But such information would signal interest and concern on the part of international actors.

Furthermore, because we examine not just the production of content but its consumption, we are able to test the disintermediation question directly. In particular, we can examine the kinds of information that are being shared via new media and whether it is actually derived from traditional media content, for example, as Twitter users share stories published by mainstream media outlets. This will not tell the entire story, of course. Mainstream news outlets also relied on the sorts of citizen journalism highlighted by proponents of disintermediation. For example, key satellite television networks, such as Al Jazeera, relied on citizen-generated video footage, often disseminated via social media, to cover protests. But the presence of traditional media in new media

would still suggest that disintermediation is far from complete and that new media still depend on the broad accessibility and filtering acumen of traditional media.

Data

To test these questions, we have developed a unique data set that allows us to demonstrate not who is publishing content—for example, tweeting—but who is consuming that content. Publication (i.e., output) is not synonymous with impact. For media to have an impact, they must be consumed in some fashion. Of course, data about information consumption cannot tell us how new media affect political unrest. This would require, at a minimum, the demonstration of a relationship between the places and times that information was consumed and the places and times that demonstrations or other political actions happened. However, gathering these data is a crucial intermediary step toward generating and testing these kinds of explanations. And even on their own, these data can demonstrate that some hypotheses are implausible. For example, it is highly unlikely that Twitter helps to mobilize protests if few protesters or potential protesters actually used Twitter during the period in question.

Our data come from the popular URL shortening service Bit.ly. Bit.ly allows users to convert lengthy URLs into shorter, more easily shareable short links that forward to the original URL when clicked. Thus, for example, the web address http://www.theatlantic.com/daily-dish/archive/2009/06/the-revolution-will-be-twittered/200478/ can be shortened to the link http://bit.ly/qk4Mlo and then shared. This service is especially useful to Twitter users, given the 140-character limit on Twitter posts, but is used more generally to facilitate linking and information exchange. Prior to the rollout of Twitter's automatic link shortener on June 7, 2011, Bit.ly was the single most-used link shortener on Twitter (Parfeni, 2010).

These data allow us to identify particular Bit.ly links, the URLs to which they resolve, and a variety of information associated with each link, including, most importantly, information about each specific request by a web user to access the information encoded in each Bit.ly link. In plainer language, our data provide information about the people who click on Bit.ly links. For obvious reasons of personal privacy, the data do not allow us to identify individual users or Internet protocol addresses, but they do allow us to identify the country from which clicks originate in most cases.

To isolate Bit.ly links relevant to the Arab Spring, we relied on Twitter data, culling every link included in a nonexhaustive sample of tweets from the following hashtags: #sidibouzid (Tunisia; 79,166 total tweets), #jan25 (Egypt; 665,092 total tweets), #feb14 (Bahrain; 48,015 total tweets), and #feb17 (Libya; 885,724 total tweets). Bit.ly was the most-used link shortener in each hashtag, accounting for 26% of links in #feb14, 38% of links in #sidibouzid, 42% of links in #jan25, and 43% of links in #feb17. These tweets cover the period from mid-January to early April 2011 (see Freelon, 2011). The links include not only those that use the bit.ly domain but also a number of branded shorteners that Bit.ly administers for a variety of clients (such as nyti.ms for *The New York Times*). We found that the top 30 branded Bit.ly domains by frequency accounted for more than 95% of all branded Bit.ly links present among the

Table 1. Summary Information About Clicks on Bit.ly Links.

Location of protest activity	Number of clicks	Number of URLs	Median clicks	Maximum clicks on any URL
Tunisia	514,367	4,669	25	15,109
Egypt	5,453,008	20,288	9	1,324,105
Bahrain	265,928	1,420	31	10,191
Libya	3,204,635	18,428	8	660,217

tweets. Our analysis incorporates all unique links bearing the bit.ly domain name plus all unique links bearing one of the top 30 branded Bit.ly domains (see Appendix A for the complete list), which come to a grand total of 44,805 links. Bit.ly provided us with data on when and where each of those links was clicked. Although all of the links themselves were shared on Twitter at some point, the Bit.ly data are not limited to clicks that were generated from Twitter. People may have clicked on any particular link because it was shared via e-mail, Facebook, or other websites.

There are shortcomings to these data. They do not capture information shared via several other media, such as SMS, some of which are likely to be more useful to organizing protests in cases where the government has not shut them down. Furthermore, we have no way of knowing how representative readers of Bit.ly links are of web users as a whole. The data likely overrepresent Twitter users and underrepresent casual or less sophisticated Web users. Finally, and perhaps most important, we cannot link Bit.ly data to actual political action. Obviously, we do not know the identity of individuals who click on Bit.ly links and cannot query them about their involvement in protests.

Despite these shortcomings, the data also have several strengths. For one, we are able to compare episodes of protest in different countries rather than rely only on single case studies. Second, the Bit.ly data provide a measure of information consumption, not just production. These data thereby allow us to construct a provisional account of who was consuming and sharing which web content when. To our knowledge, this is the first attempt to use Bit.ly data in an investigation of the Arab Spring.

Where People Clicked

We begin by presenting some simple summary statistics from the Bit.ly data for each episode of protest (see Table 1). The results suggest, first, large differences across these four episodes in the amount of information consumed via Bit.ly. Events in Egypt and in Libya (#jan25 and #feb17, respectively) garnered many more clicks on a much larger number of URLs. There was also a much higher degree of concentration of clicks on select URLs. For example, a single URL from tweets with the #jan25 hashtag (http://www.47news.jp/news/flashnews) garnered more than 1.3 million clicks, approximately 24% of all the clicks on Bit.ly links among these tweets. The protests in Egypt and Libya clearly attracted more attention and also focused that attention on a more delimited set of content.

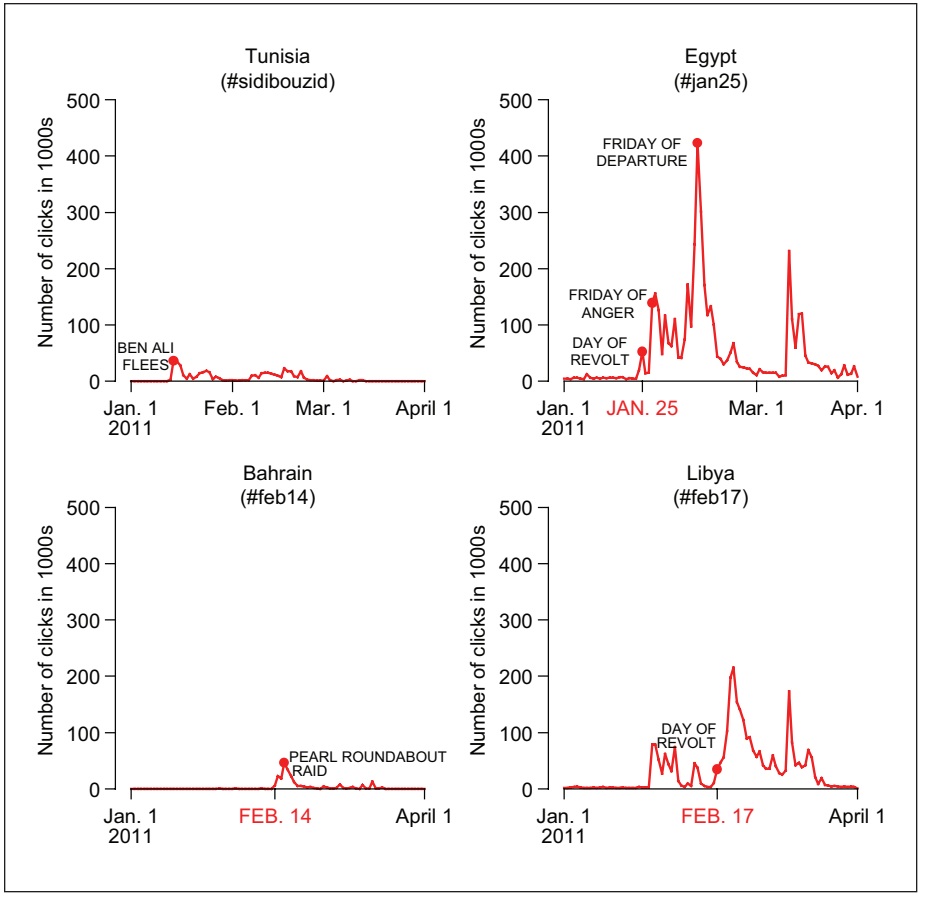

Figure 1. Number of daily clicks on Bit.ly links (January 1 to April 1, 2011).

The trends in the number of clicks demonstrate that attention to protest activity is highly episodic, increasingly sharply during dramatic events and then quickly declining. In Figure 1, we plot the daily number of clicks for URLs relevant to events in each country. In each case, there are spikes on days with notable events. Consider the spike in clicks on Tunisia-related links on the day when then-president Zine El Abidine Ben Ali fled the country or the spike in clicks on Egypt-related links when Hosni Mubarak resigned on the "Friday of Departure." Information consumption, at least via Bit.ly links, was never sustained at the highest levels. It tended to ebb and flow in response to events on the ground.

This pattern—temporary spikes in clicks that correspond to widely publicized events—suggest that Bit.ly traffic largely consists of consumers outside of the countries where the protests took place. For each protest event, we divided those who clicked on

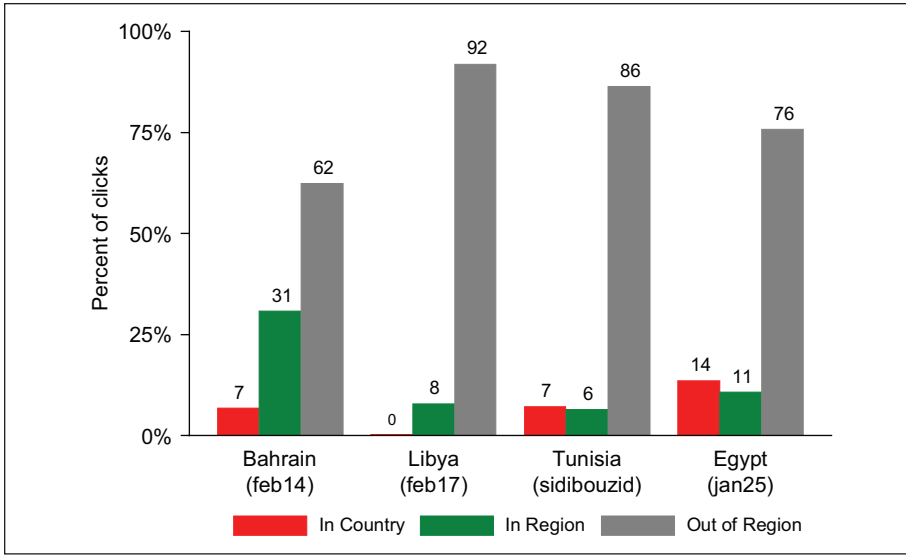

Figure 2. Percentage of clicks on Bit.ly links, by location (January 1 to April 1, 2011).

Bit.ly links into three categories—those located within the country itself, those located outside of the country but still in the MENA region, and those located outside of the MENA region—and calculated the proportions of clicks from category (Figure 2). We define the MENA region to include Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen (see also Howard et al., 2011). We again examine clicks between January 1 and April 1, 2011. During all four of the protest events, the majority, and at times the vast majority, of clicks came from outside the country. Only in the case of Bahrain did a large percentage of clicks (31%) come from within the region. Of course, this is not a surprise, given that Internet penetration is much greater in many countries outside of the region than within the region. But the lack of surprise does not make the pattern any less important.

We can combine these two patterns and show that the spikes in attention to Arab Spring protests (Figure 1) came largely from those outside of the MENA region (Figure 2). Consider clicks on the Egypt-related links, which were more numerous than those for the other three protest events. In Figure 3, we break down the number of daily clicks on these links by the location of the person who clicked. For the Bit.ly links relevant to the events in Egypt, trends in consumption out of the region spiked notably around key events (particularly, the day of Mubarak's resignation).[1] Trends in the region and within Egypt had some of this same pattern but did not spike nearly as drastically, even discounting the period immediately after January 25, 2011, when the number of clicks within Egypt drops to 0 because of the government's Internet shutdown.

The evidence accumulated thus far suggests that information promulgated via Bit.ly links was largely consumed outside of the MENA region. This confirms its value in

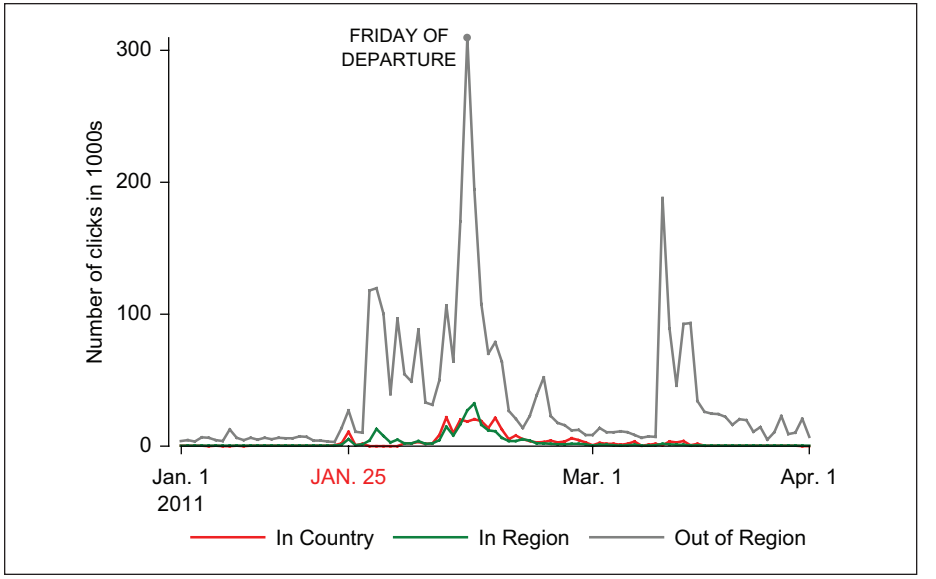

Figure 3. Daily number of clicks on Egypt-related Bit.ly links, by location.

generating external attention; it does not necessarily support its value in mobilizing protest activity within either country or region. Again, we do not mean to suggest that new media played no role in fomenting activism or protest participation. But the evidence from this particular medium suggests that the vast majority of those who consumed its information were in no position to take to the streets.

New and Old Media in the Bit.ly Links

The Arab Spring offered an unusual window into the interaction between old and new media, as information flowed among outlets of both varieties. The Bit.ly data offer us the ability to test this by examining the specific URLs that were shortened and then circulated via Twitter and other means. What kinds of media do those URLs point to? Does the pattern suggest one of disintermediation, in which citizens originate and share content, or one in which traditional news outlets are still driving much of the conversation?

Even a casual examination of the most frequently viewed Bit.ly links suggests how intertwined old and new media are and how much old media continue to figure in the conversation. For example, in the Tunisia-related links, the four most-read links were from mainstream news outlets: the Italian newspaper *Repubblica*, the French newspaper *Le Figaro*, the wire service Reuters, and a "live blog" at Al Jazeera's website. The latter in particular demonstrates how difficult it is to cleanly separate old from new media: Here is a "new" media format (a blog) on a "new" media platform (a website) run by an otherwise traditional news organization. The fifth-most-viewed link was to the Facebook page of the French ambassador to Tunisia, Boris Boillon. Again, the

platform is distinctly new, but the content is provided by a traditional actor, in this case, from government rather than the media.

For both Egypt and Libya, the five most prominently cited links were again a blend, tilting again toward mainstream news outlets. In both countries, one prominently viewed link was to the application Twibbon (http://twibbon.com), which Facebook and Twitter users can use to promote awareness of a cause. This seems to embody new media's ability to empower ordinary citizens. At the same time, the most popular links were, by far, simply live streams of on-the-ground video of events, especially Al Jazeera's live stream but also at a Japanese news site (47news.jp) and a Spanish-language news site (laptailla.com). Links to BBC content were also in the top five for both countries.

The top five links relevant to Bahrain tell a similar story. They include links to a photo on Facebook, a video on YouTube, and a video on the Arabic video-hosting site q8ping.com. They also include links to an Al Jazeera live blog and to an editorial by *New York Times* columnist Nicholas Kristof. Again, a mix of new and old media is present here.

We can present a more systematic, if incomplete, portrait of the nearly 45,000 unique URLs in this data set by categorizing URLs by whether they belong to prominent new media forms or to some of the most prominent traditional media organizations. We included as new media such websites as Facebook; YouTube; Twitter and related applications, such as Twitpic and Storify; Flickr; and blogs hosted by Blogspot and WordPress as well as particularly prominent blogs, such as BoingBoing. Our list of traditional media organizations is by no means exhaustive, but it captures 37 organizations that appear prominently among the most widely viewed links, such as *The New York Times*, Al Jazeera, and Reuters. (For our full lists of new and traditional media outlets, see Appendix B.) Approximately 77% of these 45,000 URLs were from one of the new or traditional media sources on our lists—again suggesting how much attention to news is concentrated on a few high-profile organizations.

Strikingly, the clicks to links from these traditional news organizations very substantially outnumber those to the new media organizations, even though we include some of the most prominent new media sites, such as Twitter and Facebook. Altogether, 54% of the clicks—or 71% of the subset we coded—went to traditional news. Approximately 23%—or 29% of those we coded—went to new media organizations. To be clear, these percentages do not capture other kinds of synergies between old and new media—particularly, the way that information circulated via new media (e.g., YouTube clips from cell phone videos of protests) facilitated traditional media reporting of Arab Spring events—particularly in places where it was difficult for traditional media reporters to travel. Nevertheless, these findings suggest that traditional news organizations remain at the center of the media ecology both within and outside the Arab world.

Discussion

This study addressed key debates among scholars and pundits alike about the function of new media during the Arab Spring protests in 2011. Despite our data's limitations, they also represent, to our knowledge, the first attempt to use link-click data to

understand how new media—especially, but not limited to, Twitter—were used by consumers during this period. Our results do not lend support to arguments that new media were instrumental in generating protest movements, much less bringing down dictators, within specific countries. Information consumption, at least via Bit.ly links, was never sustained at the highest levels and instead tended to ebb and flow in response to events on the ground. Our data suggest that Bit.ly traffic largely consisted of consumers *outside* of the countries where the protests took place, implying that Bit.ly, in part via Twitter, was functioning like a megaphone, generating external attention from citizens, news media, and governments outside of the country itself.

These results pose a challenge to anyone wishing to claim a substantial role for Twitter in facilitating local participation in Arab Spring protests. Previous research has already shown that the majority of social media contributors to Arab Spring–related topics came from outside the region (Howard et al., 2011). And although enterprising protesters within the region may have served as opinion leaders whose voices traveled disproportionately far (Wilson & Dunn, 2011), our evidence suggests that their voices most often fell on distant ears. Low Internet penetration rates in the countries studied are almost certainly one partial explanation for this outcome, with fear of government reprisals against speaking rebelliously online being another. Nevertheless, the question of new media's role in facilitating protest in the Arab Spring is not yet settled. Twitter is only one platform; activists on the ground may have been more active through other new media channels. In some countries, they may well have coordinated offline collective action through new media in other ways, but this was by all indications not Twitter's major function in this case.

Our findings also indicate that at least within the context of Twitter conversations about the Arab Spring, disintermediation did not occur. Traditional news media outlets still played a strong intermediary role in transmitting information about contentious political situations to broader publics. This suggests that the desire of activists to commune directly with potential sympathizers and collaborators may require more than the mere ubiquity of social media. In other words, where politics is concerned, the lowering of technological communication barriers between citizens does not seem to lead automatically to the type of "mass self-communication" described by Castells (2007), Della Porta and Mosca (2005), Hermida (2010), and others. Instead, what we see is a communication environment in which the considerable attention-attracting advantages of international media corporations persist in the form of much higher rates of viewership relative to messages published through participatory outlets, such as Facebook and YouTube. To the extent that a small number of supermassive network hubs is a key fixture of our contemporary political media ecosystem (Adamic & Glance, 2005; Benkler, 2006; Hindman, 2010), it seems that most of the available slots are still occupied by incumbents of the mass media era. Coupled with our findings about the geographic patterns of new media consumption, these results do not support arguments that new media have entirely or mostly eroded the traditional gatekeeping role of the mainstream media.

That said, there are two additional considerations that point to the continued relevance of the disintermediation question in the case of the early Arab Spring. The first is that even though mass media clearly play a dominant role in disseminating news

about contentious politics, this does not mean that citizen media play no role at all. Indeed, informal observation suggests that professional-amateur news collaboration may have played a significant role in shaping news coverage of the Arab Spring. For example, Al Jazeera received more than 1,000 camera-phone videos from Egypt's 18-day revolutionary period, publishing many of the most compelling of these (Batty, 2011). BBC Arabic also greatly increased its use of user-generated images and videos in its coverage of the Arab Spring (Batty, 2011). So despite the failure of disintermediation to completely upend contentious political communication, activists might still discern some degree of progress relative to the 20th century in the rise of participatory and social media. Indeed, the citizen-media-to-international-publics-via-international-media communication flow seems especially likely to emerge in contentious political scenarios, given that media-savvy activists are key players therein. Future research should address this possibility more directly.

The second consideration of note is that although disintermediation between activists and publics is not in evidence here, it is still possible that new media have helped to disintermediate communications between geographically distant activists. It may be too much to expect uninvolved publics to engage with far-flung protests through channels other than the international media, but similar-minded activists have a strong interest in receiving and disseminating news, tactics, sympathies, and symbols among themselves. New media may facilitate processes of "scale shift," wherein local protests come to be understood as instances of a broad, unified, and coherent social movement (McAdam, Tarrow, & Tilly, 2001; Lynch, 2012). Scale shift undeniably occurred in the MENA region in 2011—the umbrella term *Arab Spring* settles that point by itself—but the contribution of new media to this process is not yet fully understood. One empirical obstacle to answering this question is the clandestine nature of some of the networks likely used for communication between activists (e.g., SMS texting and private Facebook groups). Another is the use of multiple languages—primarily Arabic, English, and French—in online activist communication, the effective analysis of which requires teams of scholars with the appropriate linguistic and cultural expertise. These, too, are promising directions for future research.

One major limitation in addition to those already mentioned should be taken into account when interpreting these findings. Our methods are unable to account for the use of proxy services, which anonymize Internet users by falsifying their locations. An individual using such a service could appear to Bit.ly to be located thousands of miles from his or her actual location. By design, it is impossible to ascertain how many of the users in our data set were using proxies. Therefore, it is possible that more people in the Arabic region were using Twitter than our methods suggest. However, the amounts of country-specific link clicking we detected are consistent with the levels of Internet penetration in each country (Internet World Stats, 2011). Furthermore, Tor, one of the most popular proxy services, reports that it saw approximately 2,000 Egyptian users per day around January 25, 2011 (Ioerror, 2011). The orders of magnitude between this number and the numbers of clicks represented in our data give us confidence that proxy users in the countries we studied did not substantially skew our findings.

In this article, we have portrayed the Twitter-Bit.ly link-sharing process as an information consumption and redistribution channel whose main beneficiaries are traditional news organizations and people living outside the MENA region. To those who find our conclusions pessimistic, we offer two closing thoughts. First, this study speaks only to one of Earl et al.'s (2010) four online activism categories, and different patterns of new media influence are still possible within the others. Moreover, although the historical moment this study addresses is significant, it is also highly singular, and its lessons are unlikely to be universal. It is entirely possible that new media platforms have been or will be used more extensively for offline mobilization in another place or time, among a different group of participants. Second, we believe that Twitter's role as a megaphone to spread word of the Arab Spring to the world is a valuable one and represents a distinct advantage of the digital age compared to the 20th century's mass media monopoly. Citizens and protesters now hold unprecedented power to influence world opinion on their civil struggles, even if their messages must first pass through the crucible of the mainstream media's editorial process to do so. This fact alone is evidence enough of a shift of some significance in the balance of power between the global media incumbents and the everyday citizens who experience the world through them.

Appendix A

Top 30 Branded Bit.ly Domains by Frequency (in Descending Order of Rank)

Rank	Domain	Organization
1	j.mp	None[a]
2	on.fb.me	Facebook
3	aje.me	Al Jazeera
4	nyti.ms	*The New York Times*
5	bbc.in	BBC
6	huff.to	*Huffington Post*
7	f24.my	France 24
8	ind.pn	*Independent* (UK)
9	reut.rs	Reuters
10	wapo.st	*The Washington Post*
11	on.wsj.com	*The Wall Street Journal*
12	abcn.ws	ABC News
13	lat.ms	*Los Angeles Times*
14	yhoo.it	Yahoo
15	apne.ws	Associated Press
16	twb.ly	Twibbon
17	slate.me	*Slate*
18	on.cnn.com	CNN

(continued)

Appendix A (continued)

Rank	Domain	Organization
19	n.pr	NPR
20	ti.me	*Time*
21	amn.st	Amnesty International
22	on.mash.to	Mashable
23	cot.ag	CoTweet
24	on.msnbc.com	MSNBC
25	tcrn.ch	TechCrunch
26	lemde.fr	*Le Monde*
27	dai.ly	Dailymotion
28	bloom.bg	Bloomberg
29	arb.st	Arabist
30	theatln.tc	*Atlantic*

[a]The j.mp domain is similar to the bit.ly domain in that it is not associated with any particular organization and points to a variety of content.

Appendix B

List of Media Organizations

New media	Traditional media
Blogspot	ABC News
BoingBoing	Al Arabiya
Facebook	Al Jazeera
Flickr	*Atlantic Monthly*
Global Voices	*Australian*
Google	BBC
Huffington Post	*Boston Globe*
Mashable	CBS News
q8ping	*Chicago Sun-Times*
Storify	CNN
TechCrunch	*Daily Mail*
Tech President	*El Mundo*
Twitter and related	*El Pais*
Tweetdeck	*Foreign Policy*
Twibbon	*Guardian*
Twitmunin	Haaretz
Twitpic	*Independent*
Yfrog	*Le Figaro*

(continued)

Appendix B (continued)

New media	Traditional media
WordPress	*Le Monde*
YouTube	*Los Angeles Times*
	Masrawy
	Mother Jones
	MSNBC
	Nation
	News47
	NPR
	People
	Repubblica
	Reuters
	Telegraph
	The New York Times
	The Wall Street Journal
	The Washington Post
	Time
	Times of Malta
	Vanity Fair
	Voice of America
	Wired

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Note

1. For approximately 19% of clicks on Egypt-related links, the location of the individual could not be ascertained by Bit.ly.

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