



BLOGS AND BULLETS III

SYRIA'S SOCIALLY MEDIATED CIVIL WAR

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ABOUT THE REPORT

In this report from the USIP PeaceTech Initiative, a team of scholars from George Washington University and American University analyze the role of social media in Syria's civil war. The report focuses primarily on group dynamics, activist organizations' use of online media, and the relationship between new and traditional media. It draws on a public conference held in Washington, D.C., in September 2012 with Syrian activists, Western journalists, and policy analysts, as well as on a private workshop held in April 2013 at Stanford University with academic researchers and leading research scientists from top technology firms. It presents novel empirical research on Twitter conversations about Syria that demonstrates important new findings about differences across Arabic and English users, and about the emergence of distinct, insular clusters of discourse. This report is part of the ongoing Blogs and Bullets project led by USIP's PeaceTech Initiative, in partnership with George Washington University's Institute for Public Diplomacy and Global Communication. It builds on two other reports, published in 2010 and 2012: "Blogs and Bullets: New Media in Contentious Politics" and "Blogs and Bullets II: New Media and Conflict After the Arab Spring."

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[Syria's has been the most socially mediated civil conflict in history. An exceptional amount of what the outside world knows—or thinks it knows—about Syria's nearly three-year-old conflict has come from videos, analysis, and commentary circulated through social networks.]

Summary

- Analysis of the unprecedented use of social media on Syria points to important findings on the role of new media in conflict zones. In particular, social media create a dangerous illusion of unmediated information flows.
- Key curation hubs within networks may now play a gatekeeping role as powerful as that of television producers and newspaper editors.
- The implications for policymakers driven by responsibility to protect concerns are serious.
- The pattern in social media toward clustering into insular like-minded communities is unmistakable and has profound implications.
- We need a more sophisticated understanding of structural bias in social media and the difficult challenges in activist curation. It is not enough to develop methods for authenticating particular videos or vetting specific claims.
- Better ways of connecting online trends to real-world developments are critical.
- Research focused on individual transformation, regime policies, group dynamics, collective action, and external attention will likely be more productive than broader questions about citizen journalism or the Internet's effects on political conflict.
- The study of mainstream media's use of social media content should be extended to include television and the distinct demands for broadcast footage.
- The rapid growth in Arabic social media use poses serious problems for any research that draws only on English-language sources.
- We need far better tools for sentiment analysis to speak with confidence about the real political meaning of identified clusters and trends.
- Findings also need to begin to link descriptive analytics in causal ways to behavior, attitudes, or political outcomes. These findings need to be placed within the political process, and their specific effects measured on a variety of potential outcomes.
- The appropriate response to these challenges is not to abandon social media evidence, were that even possible, but rather to develop systematic procedures to guard against predictable fallacies.

Introduction

The Obama administration's push for military action against Syria in August 2013 began with videos and images circulated online depicting the horrific aftermath of an alleged chemical weapons attack in East Ghouta. Few could forget the defining horror of the image of rows of dead children lined up on a stone floor. This was hardly the first time, however, that online visual media decisively shaped the course of the war. Shocking videos and pictures profoundly shaped the world's understanding of the violent repression of peaceful protestors in the early days of the conflict. Equally shocking videos, such as one of a rebel commander eating the lung of his enemy, helped sour international views of the opposition.

Syria's has been the most socially mediated civil conflict in history. Compared with others before it, an exceptional amount of what the outside world knows—or thinks it knows—about Syria's nearly three-year-old conflict has come from videos, analysis, and commentary circulated through social networks. Given the few journalists or international observers on the ground to offer external validity checks of claimed protests or massacres, the international audience needed to assess instead a torrential flow of online information. These materials have informed international relief efforts, assessments of the identity and character of the rebel fighting groups, and debates about international intervention. But how credible was such information? How was it produced? Why did some gain attention and others, equally intriguing, fade into obscurity? And how did such information actually flow through the rapidly changing online social media?

The U.S. Institute of Peace and George Washington University Blogs and Bullets Initiative since 2010 has been grappling with many of these crucial questions. The project began with two reports that laid a framework for disaggregating the potential effects of particular new media forms along multiple levels of analysis:¹ individual attitudes and attributes, group dynamics, mobilization and protest organization, mainstream media, and regime applications for surveillance or control. This report focuses primarily on group dynamics, activist organizations' use of online media, and the relationship between new and traditional media.

The unprecedented use of social media in the Syrian conflict, and the exceptional human and strategic urgency of that conflict, made it an essential case for this ongoing research program.

This report surveys some of the best of the remarkable number of creative and important efforts to exploit the vast quantities of information available about Syria online. Journalists, most obviously, have drawn heavily on these online videos and social media accounts to report on an exceptionally difficult and dangerous conflict. Broadcast media have frequently used online videos in place of footage they could not produce on their own. Analysts inside and outside governments have also used online information to paint detailed accounts of everything from the factions of the Syrian insurgency to living conditions in Aleppo. Widely cited counts of the dead, wounded, and displaced have been constructed and verified in part through materials circulated online. These analytical efforts have set a new gold standard for the use of online and social media content to understand conflict zones.

Several findings from our survey of these efforts are especially important:

- Social media create a dangerous illusion of unmediated information flows. Those who follow YouTube videos, Syrian Twitter accounts, or Facebook postings may believe that they are receiving an accurate and comprehensive account of the conflict. But these flows are carefully curated by networks of activists and designed to craft particular narratives. Indeed,

Journalists with limited access on the ground rely heavily on online activists for video and visual content. This reliance creates the real risk of the same partial, misleading, and motivated narrative in mass media as in social media.

key curation hubs within social media networks may now play a gatekeeping role as powerful as that once played by television producers and op-ed page editors.

- Mainstream media's reliance on social media has dangers as well as benefits. Journalists with limited access on the ground rely heavily on online activists for video and visual content, as well as for contacts to interview by Skype or satellite phone. This reliance creates the real risk of the same partial, misleading, and motivated narrative in mass media as in social media. Although journalists and editors have developed sophisticated protocols for verification of particular videos, they have done much less to control for these deeper structural biases.
- The circulation of violent images and videos online has multiple effects. It is perhaps surprising that the relentless flow of violent, horrific images did not generate significant public support for intervention in Syria. The barrage had multiple potential effects. Activists hoped that it would galvanize international outrage, delegitimize the regime, bear witness, and document the atrocities for future war crimes justice. The violence, though, could also contribute to extremism and polarization, undermining the efforts of nonviolent activists to adhere to a strategy of moral critique. The violent videos could equally be demobilizing, in that Syrians and Arabs in other countries recoiled from the horrors that had been unleashed and sought instead to end the war by any means necessary. Videos of rebel atrocities and radical Islamist fighters, often circulated to win support in the Gulf, harmed the opposition's cause in the West.

We go beyond this survey of existing research to present an empirical study of more than thirty-eight million tweets in English and Arabic about Syria over twenty-eight months. We use these data to explore and analyze the social and communicative networks that evolved over the course of the conflict and have generated the following findings:

- Arabic-language tweets quickly came to dominate the online discourse. Early in the Arab Spring, English-language social media played a crucial role in transmitting the regional uprisings to a Western audience. By June 2011, Arabic had overtaken English as the dominant language, and social media increasingly focused inward on local and identity-based communities. Studies using English-only datasets can no longer be considered acceptable.
- The English-language Twitter conversation about Syria is particularly insular and increasingly interacts only with itself, creating a badly skewed impression of the broader Arabic discourse. It focused on different topics, emphasized different themes, and circulated different imagery. This has important implications for understanding mainstream media's limitations in covering Syria and other non-Western foreign crises and raises troubling questions about the skewed image that coverage might be presenting to audiences.
- Some of the Syria-focused clusters grew more insular over time; others ebbed and flowed in their engagement with others. The pattern over time toward clustering into insular communities of the like-minded is unmistakable. It did not, as might be expected, take the form of polarization per se, but rather of the evolution of a complex web of multiple insular networks. This has profound implications for how information flowed and how different groups interacted.

Social Media and Syria's War

Syrian activists began trying to mobilize international and domestic support for protests against the regime of Bashar al-Assad even before the outbreak of serious mobilization in the middle of March 2011. The uprisings in Tunisia and Egypt that transformed the Arab world in January 2011 also inspired Syrian activists, who drew on the same tools and methods used by other Arab activists across the region. They posted videos to YouTube, adopted similar slogans (“the people want to overthrow the regime”), created Twitter hashtags (#mar15), and attempted to portray an image of a rising nonviolent Syrian protest wave through online media. Small protests in Damascus and elsewhere were filmed and uploaded to YouTube to create the impression of Arab Spring–style mobilization. This impression did not necessarily reflect the reality on the ground at the time, where protest remained dangerous and rare. However, it did set in place a number of key activist nodes and networks that would be pivotal in the coming months. It also established patterns of media reliance on activist-generated online content in the absence of journalists present on the ground.

The Syrian regime originally felt confident that it would avoid such a challenge, owing to what it considered its greater legitimacy compared with the pro-Western governments under challenge in the region. It took no chances, however, particularly in light of the rapid move toward international intervention in Libya. It deployed significant repressive force against even minor signs of protest activity. This excessive response proved self-defeating when the arrest and abuse of youths in the southern town of Deraa over anti-Assad graffiti sparked local protests that rapidly spread. Their abuse in prison sparked angry protests that also spread rapidly, amplified by an aggressive social media campaign designed to draw international attention to the abuses and the then peaceful protests. Although al-Jazeera and other Arabic television stations initially downplayed their coverage of the Syrian protests in favor of the Libyan war, within months they began to lavish attention on the growing challenge to Assad's rule.

Social media and the Internet proved essential to the international coverage of Syria from the outset. The nature of the Syrian regime and of the conflict meant that very few journalists had direct access to the battlefields. In 2013, the Committee to Protect Journalists ranked Syria as “the most dangerous place in the world for journalists.”² A handful of Western journalists gained access at various points, often at a high personal cost. Marie Colvin and Anthony Shadid were only the most famous to die while covering the conflict, and freelancers such as the American Austin Tice have disappeared into the abyss. Later, more journalists began to visit rebel-controlled areas in northern Syria, but generally either under the careful guidance and control of rebel “handlers” intent on shaping a particular narrative or at the invitation of the Assad regime. Some journalists have done extraordinary work on the ground in dangerous conditions. Their work, however, stands out precisely because few others have been able to duplicate their efforts.

Most television stations, including the pan-Arab stations, relied heavily on citizen journalists and online YouTube videos for footage to accompany their stories. Many no doubt believed that the video evidence in these social media could offer the opportunity to discover a *ground truth* that would have never been possible in the past. Many networks developed elaborate in-house shops to locate, authenticate, and curate video evidence, some (like al-Jazeera) going further and actively soliciting submissions.

Many journalists and Syrian activists believed that the Internet had radically changed the ability of the regime to carry out monstrous acts of violence. The most frequent comparison

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was with 1982, when Hafez al-Assad, father of current Syrian strongman Bashar, massacred thousands of alleged Muslim Brotherhood members in the city of Hama. Not only was the massacre mostly concealed from foreign journalists for a long time, but the regime was also able to prevent even Syrian citizens from knowing the truth. At a conference in October 2012, Syrian activist Rami Nakhla said that he had not learned the truth of the 1982 devastation of Hama for some twenty-five years. In 2011, by contrast, Syrians and the world knew about the destruction of Homs in real time in exceedingly graphic detail. Whether this knowledge actually changed the outcomes remains very much in question, of course, given the limited attention to Syria or support for intervention in the West.

As the months ground on and the body count grew, the balance within the opposition shifted relentlessly toward the armed groups. By the spring of 2012, Syria's conflict looked more like a civil war with external intervention on both sides than like the earlier peaceful uprising. The August 2012 resignation of UN special envoy Kofi Annan triggered a rapid cascade toward armed uprising. The body count soared, as did the scale of devastation, the types of weaponry used, and the pace of displacement. As attacks on and kidnapping of journalists in rebel-controlled zones grew, journalists became even more wary of reporting from the ground. This created very different incentives and roles for online activists and social media.

If activists learned from the Arab Spring, the nascent Syrian armed opposition imitated the uses of the Internet by the insurgencies in Iraq and Afghanistan. Armed groups recorded and disseminated videos of their campaigns and attacks for a variety of reasons. They used such videos to demonstrate their prowess relative to that of other armed groups, to strike fear into the hearts of their adversaries, and to attract financial and political support from potential external backers. The proliferation of competing groups with different interests drastically reduced the ability of a small cadre of activists to control the message or to curate the types of videos or information circulating outward.⁴ As had been the case among Iraqi resistance factions, various strands of a highly divided opposition used videos as part of their internecine battles even more vociferously than they did as a weapon against Assad. This made it far more difficult for anyone to control the narrative.⁵

Activists, Citizen Journalists, and Competing Narratives

The sheer volume of videos, information, and discourse flowing from Syria could in principle allow the outside world unmediated access to the conflict in all its diversity. But in practice, the scale and nature of the information flows were overwhelming even to most specialists—to say nothing of the casual observer. Certain videos emerged from the cacophony to gain outsized visibility and impact: the shelling of Homs, the lung-eating rebel commander, and the bodies of the children killed by chemical weapons. The proliferation of messages and groups complicated efforts to control the message, but groups of all description nonetheless tried extremely hard to serve as curators and gatekeepers. Their efforts were helped in part by the growing insularity of online social networks described later in this report: Videos of Islamist calls for martyrdom that circulated heavily among Islamist online networks, for instance, might never be noticed by English-language journalists primarily attuned to secular activist networks.

The Syrian opposition worked hard to craft a narrative for the international media of a peaceful, pro-Western uprising, and the Syrian regime sought to portray their challengers as radical Islamists supported by nefarious outsiders, such as Saudi Arabia and Qatar. The Syrian protest movement struggled to remain nonviolent in the face of a crushing, brutal regime

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response. Some elements of the notoriously divided Syrian opposition began lobbying for international military intervention against Assad early on, with demands ranging from arms to a no-fly zone. Others rejected foreign military intervention and armed uprising, arguing instead for a principled nonviolent protest movement that would challenge Assad's moral legitimacy. Those political battles were sometimes fought out through online arguments over the naming of protests or the choice of hashtags.

Activists based in Beirut, London, Turkey, and elsewhere played key roles in transmitting information from the ground to the broader world. The Local Coordinating Committees (LCCs) collected videos and testimony in their areas and then uploaded or smuggled them out to other network nodes outside the country for broader dissemination. Facebook groups and websites, such as the Sham News Network, became primary sources of "credible" information. The Syrian Observatory for Human Rights, a London-based organization with close ties to the opposition, became one of the most widely cited sources for information about deaths and atrocities in the country. These curation efforts succeeded in part because they circulated information in English and because they formed warm bonds of trust with sympathetic journalists.

Despite their growing reliance on their reports, journalists and analysts covering Syria generally understood the tension between these groups' roles as citizen journalists reporting the truth and activists supporting a cause. Accounts of their efforts routinely framed them along lines such as "the revolutionaries and citizen-journalists in and around Syria hope their battle to spread information will save their fellow citizens from slaughter and prompt international intervention."⁶ Similarly, another story quoted an Aleppo activist as saying that "the regime prevented foreign journalists from coming in, and I needed to show the world that police were shooting dead peaceful protesters."⁷ This model seemed unproblematic when the citizen journalists were reporting a relatively uncontested single narrative of regime attacks on peaceful protestors but would become far more problematic as the opposition fragmented and rising violence and extremism clouded the purity of the protest narrative.

Most early coverage of these online activists was celebratory and uncritical, presenting the Syrians producing and disseminating these videos in overwhelmingly approving terms. Headlines such as "Syrian Citizen Journalists Risk All to Bring Stories from the Frontlines,"⁸ "Running Toward Danger, Syria's Citizens Become Journalists,"⁹ "How Media-Savvy Activists Report from the Front Lines in Syria,"¹⁰ or "For Syrian Activists, YouTube Is a Sword and a Shield"¹¹ hardly invited readers to consider the political agendas that might lie behind the selection and presentation of these videos.

But such agendas clearly did drive the calculations of which videos to highlight and circulate. Activists clearly saw the videos as an important weapon in the political and later military struggle. Citizen journalists certainly took risks to document a wide range of events, but only a select subset of those found wider distribution. "Activists on the ground and online don't just happen to capture and record media because they're in the right place at the right time. Instead, they systematically gather and strategically disseminate media."¹² Rafif Jouejati, a spokesperson for the LCCs, acknowledged that "we send the major ones, not every one."¹³ In October 2012, Syrian online activist Rami Nakhla recounted his efforts to destroy and suppress smuggled video of armed groups in Idlib: "I said, 'Oh my God, no way.' I deleted it immediately so that it will not get it online." The videos taken by another user did eventually appear on YouTube, but virtually nobody saw them because activists did not link to them or push them out through their networks. As Nakhla mentioned, "A huge part of this revolution is exposing Assad of

crimes and making sure the Assad regime is held accountable for those crimes . . . and for us to do that credibly we must issue credible information.”¹⁴

The online activists did not have the virtual field to themselves. The Syrian regime joined the fight to shape the narrative by offering their own videos and spin, the Syrian Electronic Army—which launched hacking attacks against websites deemed hostile—being the most famous manifestation. Most of the fighting groups had an information strategy to accompany their physical battles, each appealing to different constituencies and offering different narratives. The secular activists might craft a narrative of a moderate opposition to win over Western support, but at the same time an Islamist fighting group might, for instance, emphasize its Salafi credentials and jihadist spirit to win financial support from wealthy Kuwaiti and Saudi Islamist networks. As the importance of the online environment grew clear, fierce battles emerged over the interpretation of videos. For instance, the enormous publicity granted to a rebel commander filmed eating the internal organs of a vanquished enemy badly hurt the opposition’s image abroad at a crucial moment when it desperately sought arms from abroad.¹⁵

Some have argued that this heavy social mediation even contributed to the barbarism of the war. As Aryn Baker put it in a report for *Time* magazine, “The ubiquity of camera phones and social media are enabling a mixture of propaganda, intimidation and boastful exhibitionism. In this, the first YouTube war, videos have driven the conflict even as they document its horrors.”¹⁶ Others counter that war has always given birth to horrific atrocities, even if smartphones weren’t around to record them for posterity. As the veteran war correspondent Jon Lee Anderson poignantly put it, “It has always been thus, and let’s not anyone forget it.”¹⁷

Curation and Authentication

Perhaps ironically, in light of the importance of social media, curation and editorial choices became more rather than less important for the circulation of information about Syria. The deluge of information made it difficult for even specialists, to say nothing of casual news consumers, to keep up or to evaluate the credibility and significance of videos, images, or information circulating online. As Ali and Fahmy found in the coverage of the Arab Spring more broadly, editorial gatekeepers still ensure that “only a small portion of the abundant information on social networks is made available to the public through the mainstream forum.”¹⁸

Curation was not only in the hands of newspaper editors, however. Key online hubs such as Andy Carvin of NPR (@acarvin) and the UAE columnist Sultan al-Qassemi (@sultanalqassemi) directed attention for English-speaking audiences. For Arabic-speaking audiences, very different hubs such as al-Jazeera personalities Faisal al-Qassem (@kasimf) or Ali al-Dhafiri (@aliadhafiri) provided comparable curation. This curation is critical to understanding how influence works in this networked environment: Individual hubs that might be little known to the wider public had massive influence within discrete communities. Audiences tended instead to rely on a relatively small number of such individuals and news hubs to sort through, interpret, and synthesize the online materials. Such hubs played at least as important a role as the traditional newspaper or television editor in curating news. In the case of Syria, in particular, no assumption could be made about the independence or neutrality of these hubs: On the contrary, many if not most were openly activist on one side or the other, and others either consciously or unconsciously inclined toward one side’s narrative and tended to privilege such materials while ignoring or skeptically reporting the other’s.

YouTube took on a far more important role in Syria than in other recent cases, posing unique challenges and opportunities to researchers. The mainstream media relied heavily on

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these videos.¹⁹ Few could afford not to use such sources, whatever reservations they may have had, given the intense difficulty of getting journalists into Syria and the need for striking imagery. A study by the Annenberg School for Communication of Syria coverage by the BBC and al-Jazeera found vague citations such as “from YouTube” or “from the Internet,” with few specifics.²⁰ In Egypt, a legion of foreign correspondents were present to document the protests, while al-Jazeera’s unblinking eye on Tahrir provided ready-made visuals. In Syria, however, YouTube became the primary source of video content for television, websites, and analysts. One of the best examples is the *New York Times’ Watching Syria’s War*, which tracks the human cost of the conflict through videos on this site.²¹ This had both positive and more ambiguous effects, because audiences tended to assume that the YouTube-mediated visibility accurately portrayed the reality on the ground. This accuracy cannot be assumed, however.²²

Online videos and other social media-generated information is still filtered through the news norms that govern how traditional media decide what is, or isn’t, newsworthy. Many studies over the decades have pointed out how mainstream media’s need for fresh storylines can lead journalists to misrepresent stories, especially ones that stay in the news for extended periods. “I think that there’s a real divide between what’s urgent and what’s important,” said ABC’s Lara Setrakian. “We do tend toward what is urgent for the news. And then that comes at the expense of what’s important.” Deb Amos similarly noted that the length of the conflict has made it difficult to maintain interest without novel stories or images: “I’m finding now it is harder to keep my editors interested in continuing with the Syrian coverage. I can’t just go . . . myself down somewhere and wait for Hama or Homs or a peaceful demonstration.”²³

Similarly, Robert Mackey of the *New York Times*, who writes the paper’s online blog *The Lede*, which has curated online videos and other social media from the Syrian conflict since it began, said that early in the uprising a protest with a few dozen people would be news. Now, however, protest itself is largely uninteresting to journalists and, he argued, audiences, unless it has huge numbers of participants. Audience expectations, he asserted, mattered to editorial selection: “You could have tens of thousands of people demonstrating and we feel like we’ve seen it before so is it really news or not?” Indeed, the combination of politically motivated curation of online videos and other media with traditional media’s reliance on news norms that eschew complexity in favor of easy black-and-white narratives can produce highly misleading information for news audiences. This combination, coupled with traditional media’s well-documented bias toward violence and sensationalism, can lead to the eventual devaluing of storylines about peaceful protest. In Syria, for instance, *Global Voices Online* editor Ivan Sigal pointed out that a large segment of society is still agitating for peaceful routes to change and rejecting the rebel groups’ adoption of often brutally violent, military-based strategy. But such groups found no place in the dominant media narratives and generally didn’t produce the kinds of compelling videos attractive to media outlets.

The mainstream media’s storyline also shifted when they finally got secure access inside Syria from Turkey in early 2012. Before that, they mostly relied on activist groups to smuggle out video of massacres and battles, raising important verification challenges. When journalists were able to get into some parts of the country safely, they were able to verify information firsthand. Yet at the same time, new challenges arose. For instance, typically they were provided access by rebel groups, raising questions of manipulation similar to when reporters were embedded with coalition forces in the Iraq War.

As Amos pointed out, however, access also changed the story from what journalists saw online to what they saw with their own eyes, sometimes to the exclusion of important stories

happening elsewhere. Horrible things are still happening in Homs, for instance, and video is being produced documenting those atrocities. But, she said, the tendency of journalists is to ignore that in favor of the stories they can witness. “We have the same volume of video coming out of Hama and Homs, Homs in particular,” noted Amos. “And the same destruction in Homs but nobody covers it. It really doesn’t show up in any of the mainstream media at all. The arc of the story now is the militarization of the revolution and the ability of journalists to cross the border in the north, and relatively safely.”

Authentication and verification became increasingly important as the battle over the narrative accelerated.²⁴ Activists defended their practices: “When the regime began denouncing the activist videos as fakes, the LCC started to make sure the people narrating the videos would say the name of the city and the time it was taken. . . . The activists have been trained to avoid exaggeration, capture the leader of a demonstration when taping a video and show recognizable landmarks.”²⁵ In March 2012, however, the credibility of the videos became a major issue when an activist was caught embellishing video evidence.²⁶ Such incidents were particularly problematic for the preferred narratives about the role of the videos as the “truth” juxtaposed to regime lies.²⁷ If the videos and other information produced by the opposition were simply another form of deception, such claims would become harder to sustain.

The problem, then, for mainstream journalists and news organizations is twofold. First, as both anti- and pro-regime interests become more savvy, verification becomes more difficult. This isn’t just about fake videos (such as staged torture) but also about examples such as that cited, when the video is of a real protest but activists have learned to edit out or avoid making sectarian statements for rhetorical purposes. Second, the media’s well-established bias toward violence and conflict at the expense of peaceful protest and diplomacy creates both an incentive for groups to produce (or manipulate) videos with this content and potentially a distorted view of the conflict.²⁸ These factors combine to threaten news organizations’ credibility, despite the dogged efforts by most to verify and offer disclaimers to audiences about the limits of their ability to vouch for the veracity of the content. Even these caveats, however, can threaten journalists’ credibility if they become a crutch by which news organizations prop up stories based on potentially misleading or even false information and imagery.

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Analysis and Policy Uses

Journalists are not alone in finding creative ways to exploit the new forms of online content. Indeed, the innovative uses of such material by policy analysts have set new standards that will almost certainly become standard practice in all future conflict zones. Thus far, the primary use of the Internet by researchers has been to search online sources to extract otherwise unknown information about the conflict. These efforts range from the very simple (watching YouTube videos for evidence of jihadist involvement or foreign weapons) to the more complex (estimating deaths and casualties).

The exploitation of the source material can be more or less exhaustive, context-sensitive, and interpretively sound. Analysts who spend countless hours watching videos of combat from the Syrian front lines will notice when new types of weaponry suddenly appear and will appreciate the significance in ways which no mechanized online search tool could match. But even the best analysts are captives to the online availability of the relevant data: The best study of Free Syria Army battalion formation based on YouTube videos tells you nothing about the battalions that they do not announce themselves on YouTube. Text-based analytics work less effectively on YouTube than they do on Twitter or blogs. And many analysts with sophisticated

data analysis skills lack the Arabic-language competence to assess the actual content (and vice versa). The trend is, and should be, toward research teams with multiple skill sets.

Syria Deeply founder Lara Setrakian usefully emphasizes the importance of contextualizing data, which never speaks for itself. As she put it, “Contextualization is a good faith effort at providing as many degrees of an issue as possible, even when you just present one piece of information. If we’re talking about one data point, like a video from Idlib, or a rebel in Latakia, how much more can we put around that data? . . . The first step toward making sense of it is understanding the conflict as a whole, and then seeing where a single new piece of information fits in.”²⁹ The *Syria Deeply* website offers first-person accounts of the conflict, often supplemented with videos and photographs. Its conflict map features not only deaths and refugees but also “trending videos” and can be overlaid on an ordinary Google Map, a Google Earth satellite map, or a hybrid of the two.

At the other extreme of the context-driven, qualitative deep dive of *Syria Deeply* lies Global Data on Events, Location and Tone (GDELT).³⁰ This massive event dataset uses natural language processing software to code an enormous number of international news sources. The rich, detailed data offer an outstanding opportunity for researchers to create descriptive analytics about trends or to test hypotheses about conflict dynamics. For instance, Peter Aldhouse used GDELT data to produce a visually compelling map of violence in the Syrian conflict.³¹ Its conflict map allows observers to sort by location, time, number of violent events, and more.

There are limitations, of course. To the extent that these news sources depend on online content or on incomplete, partial, or biased news sources, then GDELT will reproduce systemic bias. Translation is also an issue. GDELT relies on machine translation of foreign-language sources, which could introduce a tremendous amount of error that has not yet been systematically evaluated. David Masad of Caerus Analytics conducted one of the first tests of GDELT data by comparing its analytic results with a range of other information sources, such as the Syria Death Tracker and official refugee registrations.³² He found a high correlation early in the war but increasing divergence over the course of 2012, which could be explained by media fatigue rather than by changes in the actual fighting on the ground. He also found striking differences in the degree of convergence at the local level, with some governorates (presumably urban areas accessible to journalists) showing high correlation and others (more remote or under regime control) very low. At this point, GDELT offers a potential glimpse into the future of large-scale event data analysis informed by online content, in which analysis could be applied to ongoing and developing conflict situations.

Some of the most innovative applications of online information in Syria have been in the efforts to track, confirm, document, and record the atrocities committed during the war. Some of these efforts are conducted by activists seeking to document the bloodshed, others by governments or international organizations seeking accurate information. The most ambitious projects seek to establish a documentary record that might one day allow for war crimes prosecutions and individual accountability. But even those that fall short of such aspirations have become the essential underpinning for international policy, the source of claims about the number of dead in the conflict, or attributions of responsibility.

For example, Benetech researchers Patrick Ball and Megan Price worked to document Syrian deaths for the United Nations. In a January 2013 report for the UN, they were able to identify 59,648 unique killings from seven overlapping online datasets.³³ They sought to set a high bar for inclusion in their database: a full name along with date and location of death. They

Some of the most innovative applications of online information in Syria have been in the efforts to track, confirm, document, and record the atrocities committed during the war.

reached this conclusion through a sophisticated statistical analysis, which began with a native Arabic speaker coding more than eight thousand entries to identify missing information and duplicates, and a computer algorithm (alternating decision tree) then dedicated to assessing the rest of the seven datasets. The results were used to present not only the number and timing of deaths but also their distribution by age, gender, and location.

Like the other projects described here, this study depended heavily on the validity of the underlying data. Several of the datasets employed were produced by organizations that belonged to the Syrian opposition, with two of them eventually recognized as spin-offs of the same organization. The analysis had to balance between competing pressures: On the one hand, rebel groups had a clear incentive to exaggerate the number and type of deaths; on the other, the high bar for inclusion likely meant undercounting, given the difficulty of producing accurate information from within a war zone. Significantly, however, at no point could this analysis be tested against evidence: Comparisons were between different datasets, not between datasets and empirical reality. As Ball and Price note, a stark drop in the number of casualties in the fall of 2012 could have as easily represented a decline in the reliable documentation of deaths as a drop in the actual numbers of dead.

Syria Tracker is another online resource developed by a group of Syrian activists early in the conflict that uses “a combination of automated data mining and crowdsourced human intelligence” to document Syrian deaths and human rights abuses.³⁴ It primarily used English-language sources, including news articles and blog posts, and supplemented this reporting with an on-the-ground network, accessed virtually through “field-based eye-witness reports shared via webform, email, Twitter, Facebook, YouTube and voicemail.”³⁵ The *Syria Tracker* team then geotagged and coded the reports to upload to a version of the HealthMap Crisis Platform. They claim to be “able to verify almost 90% of the documented killings mapped on their platform thanks to video and/or photographic evidence.”

Even more potentially ambitious is the Syria Justice and Accountability Centre, instituted in 2012 to collect information documenting possible war crimes and atrocities in the country.³⁶ It relies heavily on online videos to establish what it calls “a comprehensive, data repository on all the human rights violation documentation related to the conflict in Syria—a one-of-a-kind resource.” Using such information in international legal proceedings would of course require far higher standards than simply tracking or presenting evidence of atrocities. Attempts to do so would pose a dramatic new test of the validity and uses of online materials to establish truth.

A number of analysts have used videos to carefully document the tactical level of combat in Syria and the evolution, nature, and capabilities of the major opposition groups. Their study of videos has informed their description of the tactics, weaponry, and even political allegiances of a variety of rebel groups, as well as the strategy and tactics of the Syrian regime forces. In September 2013, Charles Lister of IHS Jane’s Terrorism and Insurgency Centre, London published an authoritative, influential study of the ideological trends among the Syrian rebels that relied heavily on video evidence.³⁷ The *Syria Conflict Monitor*, launched publicly in June 2013, is perhaps the best developed online platform for such analysis and features an interactive timeline of the development and evolution of the various armed groups.³⁸

Some of these studies have proven extremely influential for informing broader understandings of the course of the Syrian conflict. For instance, Jeffrey White, a former Defense Intelligence Agency analyst now at the Washington Institute for Near East Policy, has used videos to carefully analyze the military dynamics on the ground at various stages of the conflict. The Enduring America website features frequent video analyses.³⁹ Perhaps the most famous ex-

A number of analysts have used videos to carefully document the tactical level of combat in Syria and the evolution, nature, and capabilities of the major opposition groups.

ample of such research emerged when the blogger Elliot Higgins (Brown Moses) uncovered the shipment of Croatian arms to the Syrian rebels through his observation of weaponry types used in the videos. Higgins had been deeply immersed in the daily flow of videos from the front for his blog when he suddenly noticed the appearance of qualitatively different weaponry on the front lines. He traced the distinctive weapons to Croatia, and from there unearthed the trail of a (presumably) U.S.-approved and Gulf-funded flow of arms to the insurgents. This discovery moved well beyond what had been reported by traditional journalists and fundamentally reframed the debate.

Joseph Holliday's 2012 *Syria's Armed Opposition* report presented a detailed reading of the organizational structure and ideology of the Free Syrian Army drawn "largely from the armed opposition's own reports on YouTube and from other opposition media outlets." Most military defections or new military unit formations, for instance, include the release of a video. For instance, Holliday describes a video announcing the formation of a new Free Syrian Army battalion in Turkey that features not only the commander but a detailed structure and a succession of men describing their roles in the organization. Many of the battles and insurgent operations produced multiple similar videos that collectively offered a panoramic portrait of the fighting. He was also able to compare the claims on video with external reporting of the fighting and used Google Earth images to demonstrate regime strongholds and rebel positions in combat zones. He extracted a remarkable amount of information from those sources, including inferences about the levels of political support and military effectiveness at the local level across much of the country. But, he acknowledged, "Those elements of the armed opposition that have not effectively communicated will not be accounted for here."⁴⁰ This, of course, is a rather significant shortcoming and could exaggerate the strength or significance of those organizations with a strong online presence while minimizing the importance of organizations strong on the ground but with limited online activity. In particular, this could privilege groups with stronger links to outside networks that could both circumvent the technical obstacles to the Internet and understand the importance of outreach to audiences abroad.

Aaron Zelin and others have used online sources, including videos and postings to forums, to estimate the number and origin of jihadist fighters in Syria.⁴¹ Zelin points out that foreign fighters are in some ways easier to track online than indigenous Syrian groups are: "Jihadists provide extensive information about themselves in online forums, on websites and social media platforms—information that can be used to better understand their ideological debates as well as the activities they are conducting on the ground." Such Internet monitoring allowed Zelin and others to track the emergence of Jubhat al-Nusra and other jihadist groups such as Ahrar al-Sham. Studying the biographies of "martyrs" posted online allowed the construction of an authoritative dataset of the origins and affiliations of foreign fighters. It also proved especially useful for observing the emerging tensions and alliances between Jubhat al-Nusra and other like-minded groups outside Syria, including the Islamic State of Iraq across the border and al-Qaeda Central.

Not only casualties and insurgents have been explored through online material. Information circulating online has also proven an essential component in the efforts of relief organizations to understand the needs of communities inside Syria. The Syria Needs Analysis Project, a partnership between the UK and MapAction, aims to produce "situational analysis" for humanitarian responders from media and social media reports.⁴² However, researcher Greg Vaughan warns that "with the information from social media, you need to be careful about different groups promoting different agendas."⁴³

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Caerus, a nongovernmental organization (NGO) led by counterinsurgency guru David Kilcullen, uses a similar methodology, in this case in partnership with USAID, to produce extremely detailed maps of the local lines of conflict and governance. In Aleppo, using a team of Syrians and data analysts connected to a wide range of local informants, it traced a variety of indicators, from food prices and incidence of violence to the manning of roadblocks and the supply lines for different sectors of the divided city. Its information about local governance and attitudes across Syria drew from a complex mix of opinion surveys, local informants, and online content. Such information allowed the NGO to generate a unique map of local governance and the lines of military control in Aleppo and to identify particular needs and challenges.

Overall, online material has proven a rich resource for journalists and policy analysts alike. Most recognize the potential risks of relying on material curated by activists that is difficult to authenticate on the ground, and have created viable protocols for evaluating particular claims or videos. They have been less well primed to deal with potential structural biases in the information, however. They are much more sophisticated than in the past at determining whether an image ostensibly from Syria originally appeared in coverage of Iraq or whether a video of explosions in Damascus actually took place in Homs. They are less effective at determining whether the distribution of available videos systematically exaggerates (or understates) the presence of jihadist groups or privileges violent over nonviolent actions.

Syria on Twitter

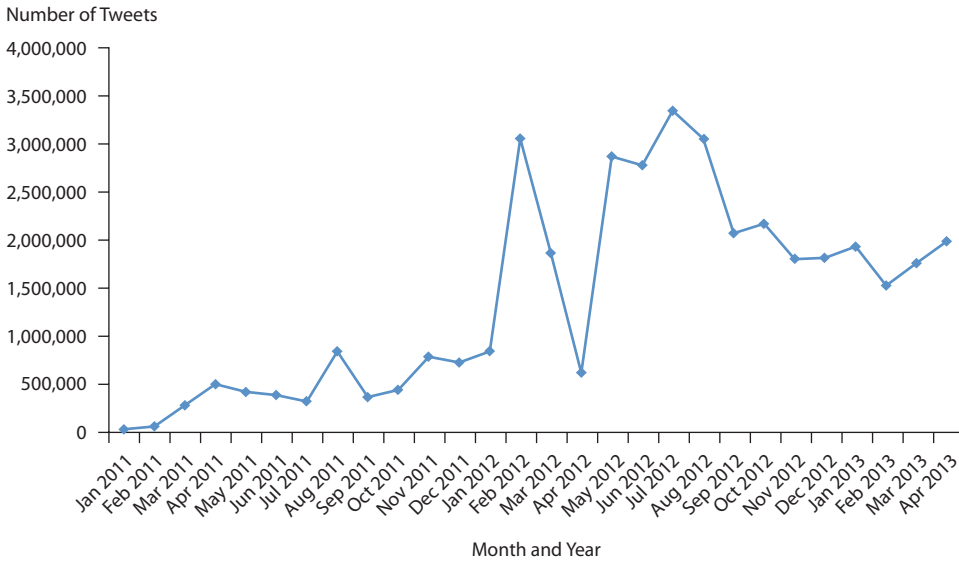
Anecdotal discussion of the changing flows of information about Syria online is extensive, but systematic empirical analysis is scant. How exactly do people interact with one another online on the question of Syria? Who are the key influencers and curators? How have these patterns changed over time? To answer these questions, we obtained an archive of every public tweet between January 1, 2011, and April 30, 2013, from the firehose Twitter API (application programming interface), which included the word *Syria* in English or Arabic. This archive included more than thirty-eight million tweets, more than 97 percent of which were in English or Arabic.

Several important points should be made about the value of this Twitter dataset. First, it directly analyzes both Arabic and English tweets, unlike many of the earlier studies of social media and the Arab uprisings. Insofar as Arabic is used considerably more than English and the topics and patterns of discussions in the two languages vary substantially, this is a major advance. Second, the data presented here are more representative of the general population than those of earlier Twitter studies. As it has been increasingly adopted across the region, Twitter is no longer an elite, English-speaking phenomenon in the Arab world. Its use has grown widely, especially in the Gulf, and represents a much broader set of opinions than it did just a few years ago. Third, our Twitter dataset draws on the full firehose API. This is important because Twitter's publicly available APIs are limited in the number of tweets they return and may omit tweets for highly active keywords. A recent study of one month of Syria-related tweets found highly significant variation in results obtained through firehose and streaming datasets.⁴⁴

Our analysis of this dataset produced a number of intriguing findings. We document an unmistakable shift from English to Arabic as the dominant language of online discourse, as well as substantive variation in the topics discussed in the two languages. We demonstrate empirically, for the first time, the breakdown of the broadly unified regional agenda that characterized the early months of the Arab Spring. We show the profound and increasing isolation of the English-language Twitter community from the broader trends in the Arabic discourse.

We document an unmistakable shift from English to Arabic as the dominant language of online discourse, as well as substantive variation in the topics discussed in the two languages.

Figure 1. Syria Tweets Per Month, Linear Scale (January 2011–April 2013)



We also show the increasing insularity of some major clusters and the changing distances between them. These results challenge some common assumptions about the nature of the online discourse on Syria and the broader Arab uprisings, as well as some of our earlier findings based on that period. The monthly distribution of these tweets is presented in figure 1.

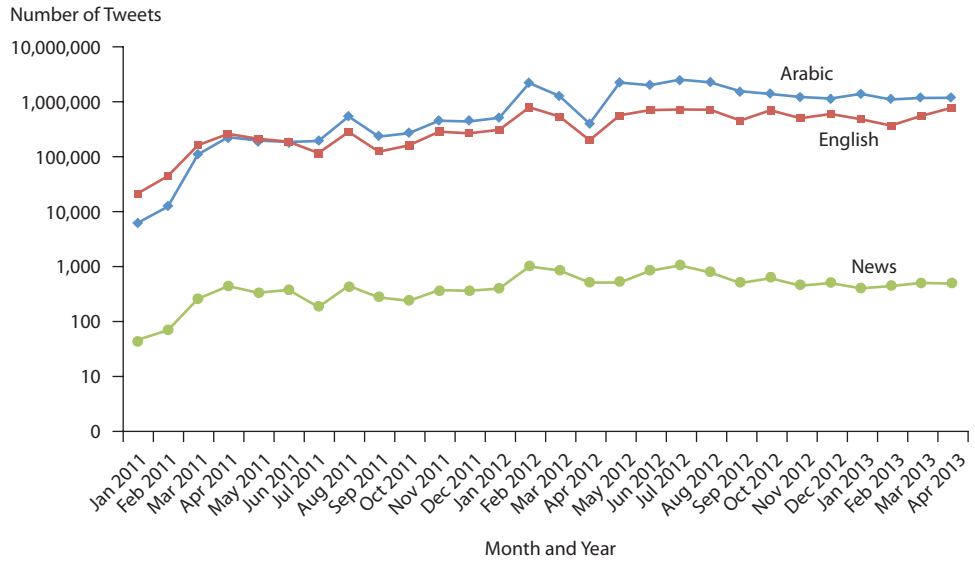
To assess the relative attention to Syria online and in the mainstream media, we compared the monthly volume of tweets with English-language articles published about Syria obtained from the Factiva database over the same period. News articles were drawn from the following publications and news agencies: *New York Times*, *Wall Street Journal*, *Washington Post*, Associated Press, Agence France-Presse, and Reuters. The results are displayed in figure 2.

The important finding here is that Twitter and mainstream media attention to Syria are highly correlated, rising and falling at similar times. This finding held for both Arabic and English tweets. The analytics do not support claims that social media paid attention to Syria differently or more consistently than the mainstream media did.

We then broke the sample down by language. We found that Arabic-language tweets overtook English-language tweets by a significant margin as the conflict ground on. This is a significant difference from the findings of the second *Blogs and Bullets* report, which looked at tweets about Egypt and several other Arab uprisings during the first months of 2011. In those cases, English-language tweets generally predominated, and a significant majority of links opened were read outside Egypt. We were not able to replicate the bit.ly analysis of the consumption of links for this report, however. Although English-language tweets on Syria outweighed Arabic tweets for the first half of 2011, by June 2011, Arabic tweets had caught up to the English and thereafter never made up less than 60 percent of the dataset. This means that researchers using only English-language tweets would be significantly misreading the content and nature of the online Twitter discourse. The intense insularity of English-speaking journalists on Twitter reinforces the importance of this finding: Not only was an ever greater portion of the Twitter discussion of Syria conducted in Arabic, English speakers were largely ignorant of the Arabic Twittersphere.

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Figure 2. Twitter versus Mainstream Media Coverage of Syria, Log Scale



The Arabic- and English-language tweets tended to focus on very different topics. These were not parallel conversations in different languages but instead entirely different discourses, with ever less interaction as time passed. For just one example, we looked at mentions of the word *Obama* in English and Arabic that included the hashtag. In March 2011, 1.33 percent of English and 0.03 percent of Arabic tweets mentioned the U.S. president, showing the relative insignificance of American policy to both language communities. By March 2012, 2.34 percent of English tweets mentioned Obama, as the debate over possible American intervention escalated, but only 0.16 percent of Arabic tweets. In March 2013, 4.28 percent of English tweets mentioned Obama, but only 0.28 percent of Arabic tweets. One interpretation would be that Arabs tweeting in Arabic cared far less about the question of U.S. intervention than Americans did, although this situation may have changed as Obama brought the prospect of a U.S. strike on Syria to center stage in late August 2013.

We then explored the most common hashtags by month in English and Arabic. Hashtags are distinct terms preceded by a hash mark (#) used by Twitter users to unite discussion on a particular topic. For example, discussions of American policy toward the Middle East might include a generic hashtag such as #Obama, which would presumably be used by users of all political persuasions. Narrow hashtags laden with greater meaning might be adopted by smaller groups to send a particular message, such as #BloodOnObamasHands or #NoMoreIraqs. Hashtags cannot be taken as support for a particular position, however, because rival groups often hijack hashtags to funnel hostile messages or conflicting information to those who might follow such a hashtag for more sincere reasons.

Some intriguing trends quickly emerged. Egypt was the most common hashtag in January 2011, but in every month after that Syria took the number one rank. Generally, the top twenty English hashtags were dominated by generic terms (#news) and by other Arab countries (#Egypt, #KSA, #Qatar, #Bahrain, #Kuwait). #Iran appeared very infrequently, as did the United States and all other non-Arab actors. Online sources in the Twitter sample were at the front through most of 2011 (#fb, #rnn), but by 2012, these sources had been supplanted by mainstream media sources. Arabic television stations were by far the most frequently

Figure 3. Number of Tweets in English and Arabic

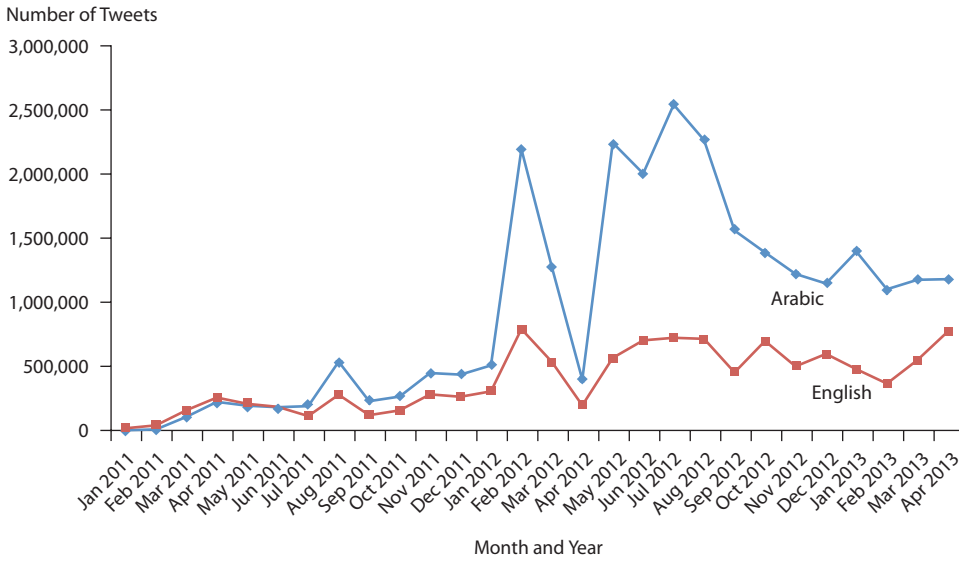
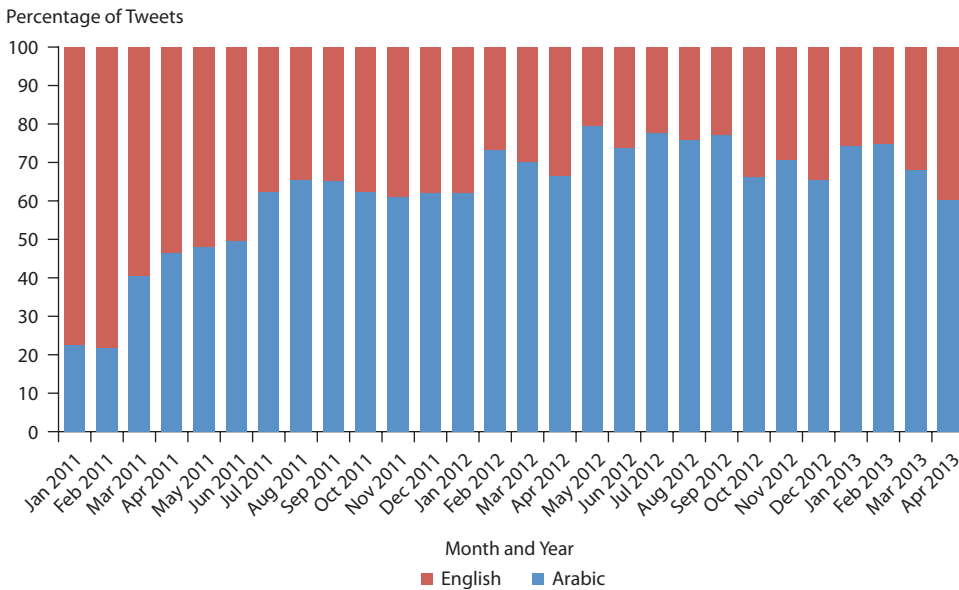


Figure 4. Percentage of Tweets in English and Arabic



hashtagged, particularly al-Arabiya and al-Jazeera. The BBC was the most hashtagged non-Arabic news station, and Reuters the most hashtagged newswire. Activist campaign hashtags did not do as well in the hashtag analysis as might have been expected. For all the efforts of online activists to shape the discourse about Syria, only #houlamassacre, #ramadanmassacre, #syriableeds, and #help4syria cracked the top twenty at any point in the twenty-eight months.

We did the same with Arabic hashtags. We could not fully compare these hashtags because Twitter only began supporting Arabic hashtags in March 2012, so the 2011 data were unusable. The data are also somewhat compromised by the fact that many Arabic-language tweets used English hashtags. Still, in Arabic, the hashtag trends were a bit different. Arab

Figure 10. Top 250 Retweets (RT) in Each Month

	March 2011	September 2011	March 2012	September 2012	March 2013
English	188	64	12	3	7
Arabic	62	186	238	247	243
Unique users	96	137	127	132	144
First RT	497	263	5,148	7,681	1,409
250th RT	44	33	177	206	152
Top users and number of tweets	Ajenglish 2,957	nabilalawadhy 1,297	Nabilalawadhy 10,363	Nabilalawadhy 28,574	Haithamalmalih 5,074
	Breakingnews 1,973	Breakingnews 676	Newssyrev 10,019	Yathalema 8,728	Kuwwithsyria 2,918
	Reuters 1,497	Reuters 432	Mohamadalarefe 7,295	Alrggor 5,581	Kasimf 3,711
	Sultanalqassemi 1,090	ismail_yasa 408	salman_alodah 6,258	Kasimf 4,769	Falahalhajeri 2,175
	Nickkristof 625	Alialdafiri 336	Alrifai1 4,763	Hajjalajmi 4,325	Mujtahhid 1,972
	Bbcworld 502	Mohanaalhubail 317	Hajjalajmi 3,419	wesal_tv 4,159	Almodifer 1,907
	Nytimes 410	Aref_12 304	Adnanalarour 2,141	anwarmalek 3,486	Enghir 1,736
	Nabilalawadhy 302	Altabtabie 267	wesal_tv 1,808	Bc4arb 2,799	wesal_tv 1,389
	Alwahidah108 279	Hasanalhusaini_ 259	alatabtabie 1,327	Alrifai1 2,360	Drsunhat 1,392
	Alialdafiri 248	wesal_tv 250	dr_almosleh 1,081	_mu3awya_ 1,469	hamed_alali 1,211
	March15syria 239	dima_khatib 249	mishari_alafasy 1,060	Sonnaleb3 1,402	Afreesyriaa 1,180
	alarabiya_ar 207	Ajenglish 226	Abdulaziztarifi 1,042	Bbrq8 1,127	Strategyaffairs 1,079

Note: To identify influential users, we required at least three tweets to appear in the top 250 to not give undue prominence to individuals with only one popular tweet.

Six months later, in September 2011, only 25.6 percent of the top 250 retweeted tweets were in English—a nearly perfect reversal of the previous period. English news sites retained a strong presence, @breakingnews and @reuters occupying the second and third spots. Arab voices were rising in prominence, including the al-Jazeera presenters @alialdafiri and @dima_khatib. The single most influential tweeter was the Kuwaiti Islamist Nabil al-Awadhy (@nabilalawadhy), who would occupy the top spot in three consecutive samples with his emotional tweets on behalf of the Syrian opposition and calls to donate money to the cause.

March 2012 marked a qualitative transformation of the Twitter discourse. From this point on, English tweets almost disappear from the top 250 retweets and are never more than 5 percent of any subsequent sample month. The growth in popularity of the “Syria” keyword meant that the 250th-ranked tweet in the last three months would have easily ranked in the top three or four tweets in the first two months (the 250th most popular tweet in the September 2012 sample received 206 retweets; the most retweeted item in September 2011 received 263 retweets).

The contents of these discussions and the most influential users were also very different. The dominant voices were now Gulf Islamist figures such as Awadhy, Salman al-Odeh (@salman_alodah), and Mohamed al-Arefe (@mohamadalarefe). Al-Jazeera’s popular talk show host Faisal al-Qasim (@FaisalAlQasim) became increasingly important, placing fourth in September 2012 and third in March 2013. Saudi media personalities such as @Shuguairi and @Almodifer also became increasingly important. The most influential personality overall was the Kuwaiti Islamist Nabil al-Awadhy (@nabilalawadhy). March 2012 was the first sample in which a Syrian opposition source ranked highly, with @newssyrev ranking second, between Awadhy and al-Arefe.

The news bulletins and Arab spring references that dominated the March 2011 sample also lost their prominence. The top tweet in March 2013, for instance, was the Saudi media personality @Shugairi's raw appeal: "Crimes after crimes are happening in Syria . . . how long will God be shamed." In both March 2012 and September 2012, the top retweet was a call on "Twitter brigades" to spread pictures of the heroes of the Syrian revolution (by @newsyrrev and @yathalema, respectively). The second ranked was @hajjalajmi's tweeting of information on how to give money to support Syrian opposition fighters. Appeals for contributions to support the Syrian opposition and photos and videos depicting suffering Syrian children and civilians were extremely popular. Broad Arab Spring references faded as Islamic fatwas in support of a Syrian jihad and accounts of fighting by various opposition factions surged.

Clusters

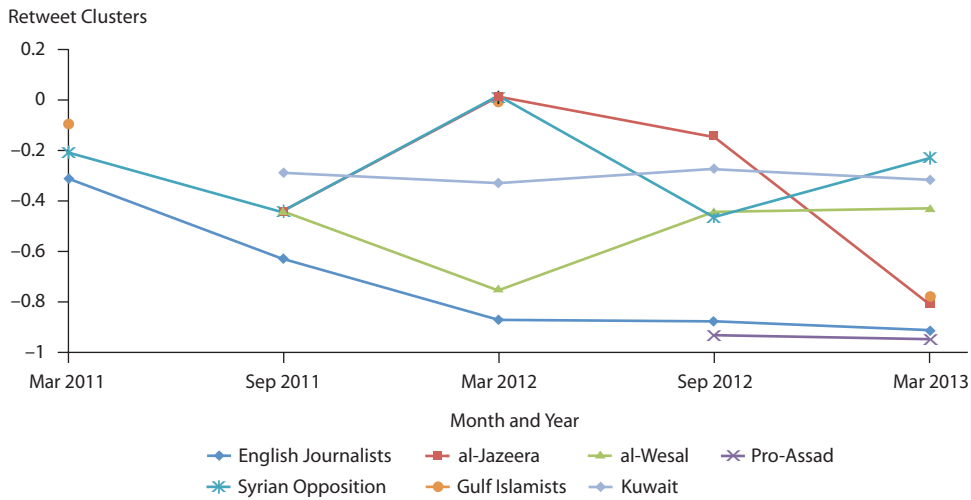
We next identified clusters consisting of users that occupied densely interlinked retweet sub-networks. We ran this analysis using the same six-month interval as for the word clouds. We examined the ten largest retweet clusters in each of these sample months. We then identified these clusters by looking at the Twitter bios and tweets of the most retweeted network members, as well as the most representative (that is, most retweeted) tweets within the clusters. Although these clusters are defined by their most retweeted users, they also include many casual onlookers that happened to exhibit highly consistent retweet patterns. In other words, not all members of the English-language journalist clusters are English-speaking journalists, and not all members of the Salafi cluster are Salafis, but the most retweeted users in those clusters were. We matched the identified clusters across the five surveyed months to be able to show not only how general trends changed but how specific clusters changed. Finally, we computed the insularity of these clusters, which can also be thought of as a measure of their level of fragmentation. For each cluster, we calculated a coefficient called the E-I ratio, which ranges from -1 to 1 , -1 meaning that all retweets are internal to the cluster, 1 meaning all retweets are external, and 0 meaning equal numbers of internal and external retweets. These numbers indicate the extent to which members of each cluster retweet within that cluster as opposed to outside it.

What emerged was a fascinating illustration of the fragmentation of the Syrian narrative. The clusters do not show polarization, because that concept implies two clear rival poles, which we might see in Egypt or Bahrain or, for that matter, American politics. Instead, the cluster analysis demonstrated the shift from a fairly decentralized Syrian Twittersphere tightly embedded in the broader Arab Spring narrative into the consolidation of multiple, increasingly insular, competing networks. (See figure 11.)

The fading of an earlier, more integrated Arab discourse is one of the most striking patterns that emerge in the data. In March 2011, for instance, the most insular network was one of English-language journalists (-0.311), though one of Syrian activists and English-speaking Arabs was only slightly less so (-0.266). One key cluster of mostly Egyptian activists and al-Jazeera-related accounts actually had a positive insularity ratio ($+0.011$). The al-Jazeera cluster maintained a positive insularity as recently as September 2012 ($+0.01$) but plummeted six months later to an insularity almost as great as that of the English-language journalists (-0.808). This offers empirical support to the anecdotal sense of a fairly unified online discourse about the early Arab uprisings. In those early days, people tweeted about Egypt and Syria to a broad community and spoke across national and political lines.

By September 2011, however, those two activist clusters had already disappeared, and the insularity of the emerging clusters increased rapidly. The English-speaking journalists now

The cluster analysis demonstrated the shift from a fairly decentralized Syrian Twittersphere tightly embedded in the broader Arab Spring narrative into the consolidation of multiple, increasingly insular, competing networks.

Figure 11. Cluster Insularity over Time, March 2011–March 2013

had an E-I ratio of -0.628 , more than doubling their insularity within six months. In March 2012, the insularity of the English-speaking journalist cluster had increased to -0.869 , which increased even further by September 2012 to -0.877 , and in March 2013 to an astonishing -0.912 . In other words, English-language Twitter conversations about Syria were almost completely cut off from the diverse and far larger discussions in Arabic. This increasing insularity has a counterintuitive implication for social influence, however: Being an influential hub within a particular cluster begins to matter more than the absolute number of followers. Influential accounts within the English-language cluster, for example, might rarely produce tweets that rank in the top 250 most retweeted tweets overall but still have considerable influence over how Western social media users understood Syria.

The rise of different kinds of support for the Syrian opposition also can be observed in our data. Two important and roughly equally insular Arabic-language clusters in support of the Syrian opposition appeared in the September 2011 sample: a Salafi cluster supporting the Syrian opposition from a Saudi Islamist perspective, anchored by the Salafi television station @alwesal_tv (-0.439), and an al-Jazeera cluster anchored by al-Jazeera stars such as Faisal al-Kasim (@kasimf) and Ali al-Dafiri (@alialdafiri) and the @ajalive feed (-0.444). Both of those clusters would continue in the later samples. The Salafi cluster appeared in every subsequent sample, the greatest insularity coming in March 2012 (-0.753). There was also a clearly identifiable cluster of Gulf Islamists distinct from the Salafi al-Wesal cluster, featuring well-known figures such as @mohamadlarefe, @nabilalawadhy, @tareqalsuwaidan, and @salman_alodeh.

A Syrian opposition cluster in Arabic could be tracked through the whole sample but looked different in each sample, likely reflecting the changes on the ground. This cluster featured accounts such as @syria_mubasher, @alrifai1, @yathalema, @revolutionsyria, @anonymoussyria, and @syrrevo. In March 2011, this group was mixed with key English-language hubs and activists from around the region. In September 2011 and March 2012, it was mixed with al-Jazeera figures. In September 2012, it was dominated by Free Syrian Army accounts and hashtags.

No clear pro-Assad cluster appeared among the largest clusters in English or Arabic during 2011 or March 2012. But when one did appear, in September 2012, it had extremely large

English-language Twitter conversations about Syria were almost completely cut off from the diverse and far larger discussions in Arabic.

insularity (−0.932), which increased (to −0.948) in March 2013. This pro-Assad cluster therefore spoke mostly to its own, showing little seeming effort to engage with or persuade other clusters—as one might expect two years into a horrific civil war. The most prominent news source in this cluster was the Lebanese-based TV station al-Mayadeen. Also interestingly, the most retweeted accounts in this pro-Assad cluster included both Syrians inside Syria and a number of identifiably Shia accounts from various Gulf states.

Finally, as noted in the discussion of hashtags, there were clear and relatively insular national clusters. Kuwait and Saudi Arabia were the largest and most consistent of these clusters, and Bahrainis were often scattered through the Saudi clusters. These clusters were not purely national, however: Significant numbers of Bahraini, Kuwaiti, and Saudi Shia, for instance, were part of a broadly pro-Assad regional cluster, and an anti-Shiite Salafi Islamist cluster similarly spanned the Gulf. This reflects the emergence more broadly of national Twitterspheres overtaking the early pan-Arab character of the 2011 Arab Twittersphere.

These data were then used to create social network visualizations on the relationship between the clusters. Such visualizations have been used to identify connections between central and marginal actors in a variety of political contexts, mostly in stable countries.⁴⁶ This method could be used to explore changing connections between rebel and regime supporters, for instance, or the Salafi-al-Jazeera clusters or the English-Arabic clusters. Very little such analysis thus far has been done in Syria to date, with one exception, the work of R-Shief.⁴⁷

The Figures 12, 13, and 14 present annual snapshots of the Syria Twittersphere over three years. Several key clusters in each are labeled. Clusters that could not be consistently identified across at least two months were removed.

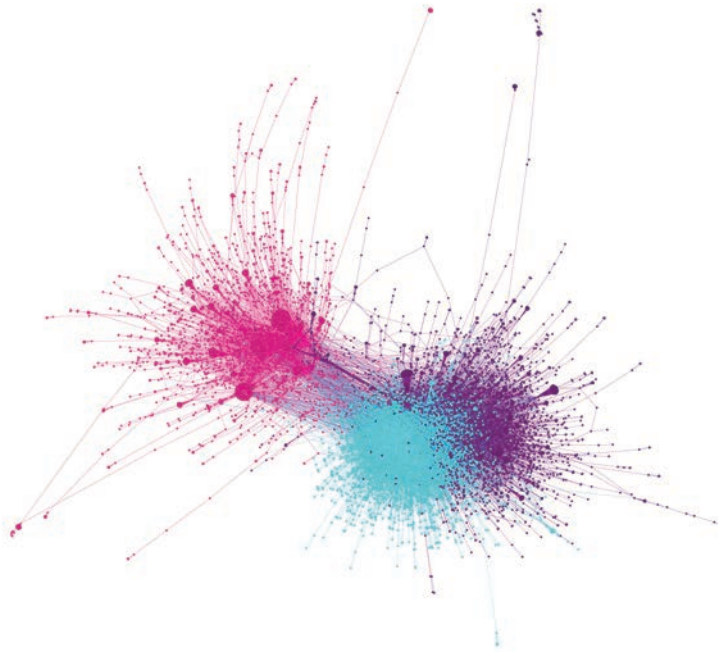
Note the growing density of the multiple poles as time goes on and the persistent estrangement of English-language journalists from other communities. These findings demonstrate once again the insularity of English-language journalists and the rapid growth of the Arabic-speaking networks. Both findings are potentially troubling for at least two reasons. First, they imply a journalistic community whose coverage may be influenced more by its cultural and professional biases than by the myriad constituencies within Syria and across the region. Second, they point to the power of social media to draw people into like-minded networks that interpret the news through the prism of their own information bubbles. This is consistent in many ways with popular concerns about informational seclusion brought on by online “Daily Mes” and “filter bubbles.”⁴⁸ Our findings indicate that language barriers and relatively insular national communities considerably exacerbate these highly fragmented outcomes.

Conclusion

Syria’s online media environment is likely to be a model for future crises, making it especially important to understand how information is produced, how it flows through social networks, and how it gains or loses credibility with relevant external audiences and gatekeepers. The bottom line is that researchers, analysts, journalists, and policymakers have found astonishingly inventive ways to exploit the wealth of information about the conflict circulating online. But they have not always taken seriously the problems posed by potential systemic and motivated biases in this information. Nor have they developed adequate filters with which to make sense not only of what is included but also of what is not.

Social media have revolutionized the way that the world has understood the Syrian conflict and how that conflict has been waged. This report has sought to move beyond both the celebratory stage of marveling at the courageous work of citizen journalists and the skeptical

These findings point to the power of social media to draw people into like-minded networks that interpret the news through the prism of their own information bubbles.

Figure 12. Syria Twittersphere, March 2011

Note: pink = English-speaking journalists; purple = Gulf Islamists; turquoise = Syrian opposition.

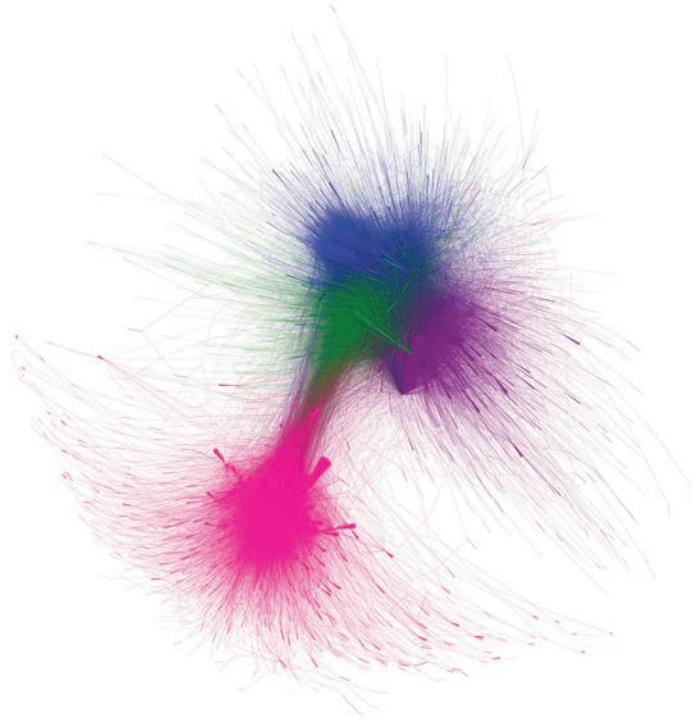
stance of dismissing the novelty or significance of the new media content. Syria has been at the cutting edge of the evolution of new uses of social media and the Internet by political actors, insurgent groups, journalists, and researchers. These new methods are likely to characterize future socially mediated conflicts. Understanding their patterns, implications, and potential uses therefore will have enduring value.

This report reveals a rapidly changing social media environment that has a complex relationship with traditional mainstream media. Our research has many implications for those studying new and old media, particularly in the context of political unrest and civil strife.

First, the growth and complexity of the Arabic-language Twittersphere highlight the importance of avoiding research designs that look only at English-language social media. The insularity of the English-language cluster compared with competing networks in the Arabic Twittersphere poses important questions for understanding and assessing the nature, biases, and influence of Western mainstream media's coverage of foreign crises. It is clear that English-only studies of digital media are missing so much of the real story as to be arguably misleading. This is troubling because, quite simply, it's often impractical for many scholars and others in the West to do multilingual studies. Yet as our conference and workshop discovered, and we report here, many creative and even cross-national initiatives take on the challenges of synthesizing linguistic and cultural expertise with "big data" methods. We find that encouraging.

Second, in a crisis such as that engulfing Syria over the last two years that roils an entire region, social media—or at least Twitter—appear to become tools for the creation of like-

English-only studies of digital media are missing so much of the real story as to be arguably misleading.

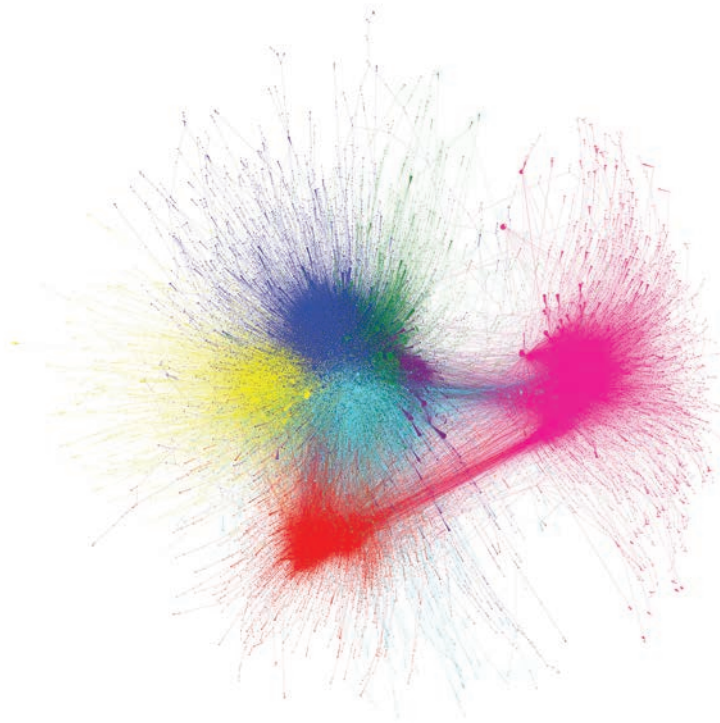
Figure 13. Syria Twittersphere, March 2012

Note: pink = English-speaking journalists; purple = Gulf Islamists; blue = al-Wesal; green = al-Jazeera.

Journalists and analysts must think more carefully about how to correct for the systematic over- or underrepresentation of particular viewpoints or data and how to check online information against offline developments.

minded communities. Those clusters are exposed to different information, have different priorities, and will likely respond differently to new developments. We need to study more carefully the extent to which the network insularity we observe allows videos or messages to be “narrowcast” online—that is, jihadist messages in Arabic reach one audience and moderate messages in English reach another. This might also help explain the outsized impact of certain videos that cross from one cluster into another, such as the lung-eating rebel commander whose brutality might have been common knowledge in the Arabic clusters but undermined the English narratives. This is important because it not only further underscores the value of more comprehensive datasets (in terms of quantity and linguistics) but also reveals a complex web of political actors and interests. This should inform strategic communications and public diplomacy campaigns. Policymakers must prioritize understanding, tracking, and engaging with multiple competing networks.

Third, we need a more sophisticated understanding of the structural biases in social media and the difficult challenges posed by activist curation. It is not enough to develop methods for authenticating particular videos or vetting specific claims, though these are clearly extremely important. Journalists and analysts must think more carefully about how to correct for the systematic over- or underrepresentation of particular viewpoints or data and how to check online information against offline developments. This challenge affects everything from the tabulation of the dead to assessing the military role of organizations that do not post their exploits online to determining the moderation or extremism of insurgency factions.

Figure 14. Syria Twittersphere, March 2013

Note: red = pro-Assad; yellow = Kuwaitis; turquoise = Syrian opposition; blue = al-Wesal; green = al-Jazeera; purple = Gulf Islamists; pink = English-speaking journalists.

Fourth, we need better ways to connect online trends to real-world developments. Does heavy attention to particular Syrian rebel groups by Kuwaiti Salafis necessarily translate into material support to those groups? Do more polarized online communities necessarily mean more divisions on the ground? Which groups and trends tend to be overrepresented or underrepresented online? The holy grail of big data analysis is the ability to anticipate major developments, such as the outbreak of protests and violence, in order to act to prevent them. GDELT, the international events database described earlier, is already beginning to demonstrate strong predictive potential in conflict zones such as Afghanistan.⁴⁹ While social media activity may someday help predict violent events, to our knowledge no study has yet demonstrated this.⁵⁰

Finally, and related, the implications for policymakers in an era driven by responsibility to protect (R2P) concerns are serious. Adherence to R2P principles places an even greater burden on policymakers to be certain that the information they are basing their interventionist decisions on is valid. Social media can have the advantage of spreading information about human rights violations that would have never made it to the public eye in a pre-Internet era, when regimes could exercise much more control over the flow of information. At the same time, however, social media appear to have the potential for the kinds of biases and manipulations that can confuse rumor with fact and favor sensational claims over sober analysis. Couple that with our findings of media insularity, fragmentation, and manipulation of narratives and videos, and you have a potentially dangerous mix of variables that can hamper a reasoned debate about R2P responsibilities and policies. At the same time, the failure of these videos and

online activists to generate greater sympathy or support for intervention should be the subject of future research.

Recommendations

What next? The Blogs and Bullets research program has, from its inception in 2009, sought to avoid the pitfalls of straw-man debates between so-called cyberutopians and cyberskeptics. Instead, we have adopted a different approach that seeks to use innovative data to show the context of digital media use and influence. Specifically, we propose five lenses through which researchers could examine the complex interaction between social media and political action: individual transformation, regime policies, group dynamics, collective action, and external attention. Research focused on these mechanisms and lenses will likely be more productive than larger general questions about citizen journalism or the Internet's generic effects on political conflict.

This study demonstrates some of the many potential uses of Twitter data for understanding the dynamics of the Syria conflict. But other online platforms may have very different, and equally significant, patterns. YouTube, in particular, deserves a study of its own, given the high prominence of the videos posted on that site in the conflict. Facebook also offers enormous potential for research into social networks and individual attitude changes, although privacy concerns loom large for anything beyond research on public groups. The study of mainstream media usages of social media content should be extended to include television and to incorporate Arabic sources as well as English.

Ethical considerations should always be kept in mind when embarking on such research. This sort of data analysis—particularly of nonpublic information, such as personal Facebook pages or cellphone records—risks compromising privacy under any circumstances. In civil war conditions such as Syria's, the potential exposure of activists' identities risks their very lives. The revelations of the cooperation by major Internet and communications companies with the U.S. government on the PRISM program and broader Patriot Act provisions cast a decidedly different light on public-private partnerships. Should researchers be using even anonymized data for social science analysis? Can privacy be fully guaranteed? What about informed consent and institutional review board provisions? Our approach is to use only content that conflict actors have themselves made public. We do not plan to analyze any data either password-protected or otherwise designated as private. Any research team planning to do so is advised to make absolutely certain that their published work does no harm to anyone involved in the conflict.

The basic analytics presented give only aggregated trends. If individual users were separated for analysis and either hand-coded or subjected to automated content analysis, it could provide genuinely new insights into how personal attitudes change over time. For instance, use of particular terminology or hashtags could indicate attitudinal change toward more sectarian or more tolerant opinions, with key inflection points identified and matched with possible real-world drivers. Sentiment is only one potential characteristic that the latest automated methods can detect; others include discussion topics, locations, the use of external evidence to support assertions, and calls to action. These methods do much more than simply match particular keywords: When prepared carefully, they can discriminate between texts almost as well as humans in many cases.

The value of such analysis would be significantly increased if at least the generic identity and location of the individual users could be ascertained. It matters, for instance, whether increasingly radical sentiments are being tracked from users in Aleppo or New Jersey. This

raises serious privacy and security issues, though these issues are less pressing with respect to Twitter (which users intentionally make public) than to Facebook, Google searches, or other possible datasets. A major branch of Twitter research is devoted to user geolocation, but much of this work relies on latitude and longitude coordinates, which only a small minority of users opt to publicize.⁵¹

We also need far better tools for sentiment analysis to speak with confidence about the real political meaning of the clusters and trends identified in our analysis. Hashtag trends are not enough because they do not reveal the content of the discourse attached to the hashtag. This is particularly problematic in light of the practice of hashtag hijacking, where opponents might appropriate a popular hashtag to air their grievances. A member of the Syrian opposition, for instance, might post a series of graphic pictures of dead civilians with a hashtag commonly used by regime supporters. Sentiment analysis might attach an interpretive dimension to the tweets or online posts, revealing whether the author was positively or negatively disposed toward the topic at hand. This is difficult to do reliably for both manual coders and the software algorithms that rely on them, particularly in Arabic.⁵²

These findings also need to begin to link descriptive analytics in causal ways to behavior, attitudes, or political outcomes. These findings need to be placed in the political process and their specific effects measured on a variety of potential outcomes. For instance, does the increased flow of graphic images in social media lead to greater or lesser willingness to join the rebellion? Do they have any sustained impact on external support for the opposition? Do rebel groups that distribute such images or videos more effectively attract greater funding and political support or do better on the battlefield?

The Syrian conflict has demonstrated how the information circulating on social media can be extremely useful for research and analysis, if handled carefully. If not, then it could end up reproducing very misleading analytical conclusions, creating artificial certainty, embedding false narratives, and encouraging counterproductive interventions. But done properly, the use of online materials allows for radically new and deeply useful explorations of otherwise inaccessible conflict zones, sophisticated empirical analysis of broad patterns and trends, and the documentation of war crimes and abuses. The appropriate response to the challenges we raise is not to abandon social media evidence, as if that were even possible in today's digital age, but rather to develop systematic procedures to guard against predictable fallacies.

Syria's horrific conflict has dramatically challenged researchers and policymakers alike. This report suggests ways in which social media have been or could be used to better understand what happened. Those effects are complex and uneven and do not offer any easy answers. However, they should allow more effective understanding of and response to future socially mediated violent conflicts.

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Notes

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Syria has been the most socially mediated conflict in history. Compared with previous conflicts, an exceptional amount of what the outside world knows—or thinks it knows—about the nearly three-year-old conflict has come from videos, analysis, and commentary circulated through social networks. These materials have informed international relief efforts, assessments of the identity and character of the rebel fighting groups, and debates about international intervention. But how credible was such information? How was it produced? Why did some gain attention and other, equally intriguing, information fade into obscurity? How did such information actually flow through the rapidly changing online social media? This report combines a broad survey of path-breaking work on social media in conflict zones with unique new research findings based on analysis of discussions of Syria on Twitter.

Related Links

- *Social Media Reporting and the Syrian Civil War* by Anand Varghese (Peace Brief, June 2013)
- *Blogs and Bullets II: New Media and Conflict after the Arab Spring* by Sean Aday, Henry Farrell, Marc Lynch, John Sides, and Deen Freelon (Peaceworks, July 2012)
- *Evaluating Media Interventions in Conflict Countries* by Amelia Arsenault, Sheldon Himelfarb, and Susan Abbott (Peaceworks, October 2011)
- *Media in Fragile Environments* by Andrew Robertson, Eran Fraenkel, Emrys Schoemaker, and Sheldon Himelfarb (USIP Press, 2011)
- *Advancing New Media Research* by Sean Aday, Henry Farrell, Marc Lynch, and John Sides (Special Report, September 2010)
- *Blogs and Bullets: New Media in Contentious Politics* by Sean Aday, Henry Farrell, Marc Lynch, John Sides, John Kelly, Ethan Zuckerman (Peaceworks, September 2010)





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