

osition political parties closer together based on the program's algorithm. There were four major types of content that typified Egyptian viral videos: raw protest and mobilization footage; citizen commentary; political punditry; and "soundtracks for the revolution." Raw protest and mobilization footage was the most common, totaling nearly 5.5 million views from 23 videos. One video featured a detailed 20-minute dialogue between a religious scholar and political philosopher about the future of Egypt, totaling 100,000 views. Another featured a home-made video with a young girl's commentary about political events, totaling 275,000 views. But the most popular video, a music video, was heralded as a soundtrack to the revolution and served as a rallying cry of support for the Egyptian peoples' protests. This music video was the single most popular viral video for the Egyptian revolution, uploaded on January 27, and accounted for 25 percent of the top-20 video views. A list of the most prominent viral videos about the political uprising in Egypt appears in the Appendix Conclusions Social media played a crucial role in the political uprising in Tunisia and Egypt. Using original data from multiple social media sources, we can offer some concrete conclusions about what that role was. First, social media played a central role in shaping political debates in the Arab spring. Second, a spike in online revolutionary conversations often preceded major events on the ground. Third, social media helped spread democratic ideas across international borders. Democratization movements existed in North Africa and the Middle East long before technologies such as mobile phones, the Internet, and social media came to the region. However, with these technologies people who share an interest in democracy learned to build extensive networks, create social capital, and organize political action. In both Tunisia and Egypt, these virtual networks materialized in the streets in early 2011 to help bring down two longstanding dictators. Anecdotally, we know that social media played an important role at key moments in the events of this year. But what are the big-picture trends in social media use that explain why public demand for democratic reform rose now, and why events unfolded the way they did? Our unique datasets reveal much about the role of different kinds of social media. The Tunisian blogosphere provided space for open political dialogue about regime corruption and the potential for political change. Twitter relayed stories of successful mobilization within and between countries. Facebook functioned as a central node in networks of political discontent in Egypt. During the protests, YouTube and other video archiving centers allowed citizen journalists, using mobile phone cameras and consumer electronics, to broadcast stories that the mainstream media could not or did not want to cover. Social media alone did not cause political upheaval in North Africa. But information technologies -- including mobile phones and the Internet -- altered the capacity of citizens and civil society actors to affect domestic politics. Social media, such as Facebook, Twitter, and YouTube, have several kinds of impact on local systems of political communication. First, social media provides new opportunities and new tools for social movements to respond to conditions in their countries. It is clear that the ability to produce and consume political content, independent of social elites, is important because the public sense of shared grievances and potential for change can develop rapidly. Second, social media fosters transnational links between individuals and groups. This means that network ties form between international and local democratization movements, and that compelling stories, told in short text messages or long video documentaries, circulate around the region. The inspiration of success in Tunisia was not just a fast-

spreading contagion, for civil society leaders in neighboring countries also learned effective strategies of successful movement organizing through social media. Social movements are traditionally defined as collective challenges, based on shared purposes, social solidarity, and sustained interactions with elites, opponents and authorities. They support a public claim against target authorities and engage in political action by forming coalitions, organizing public meetings and demonstrations, and using the media to highlight their claims. Through such demonstrations and media use, social movements display their unity, numbers and commitment. Social media, social networking applications, and consumer electronics have not changed the purpose of social movement organizing — economic opportunity and political voice are still the shared goals of social movements. But in North Africa and the Middle East, relatively new youth movements have been surprised by the speed, size and success of protests they have organized over social networking Websites. Over several years they have found their political voice online and have held their meetings virtually. Each of the dictators in these countries has long had many political enemies, but they were a fragmented group of opponents. Now these opponents do more than use broadcast media to highlight their claims. They use social media to identify goals, build solidarity, and organize demonstrations. During the Arab Spring, individuals demonstrated their desire for freedom through social media, and social media became a critical part of the toolkit used to achieve that freedom.

Methods Appendix Analyzing Twitter Data The data for Figures 1, 3 and 5, comes from the analysis of Twitter feeds. This project is among the first to analyze the flow of text messages about the potential and strategy of democratization movements among multiple countries. In addition, we figured out how to distinguish between domestic, regional, and international contributors to the growing online consciousness about political crisis. Demonstrating Twitter's impact on regional conversations is an important contribution but was technically challenging. We processed more than 3 million tweets for their use of hashtags about events in North Africa and the Middle East. We purchased cloud computing time from Amazon to speed up the text analysis, and wrote automated scripts for identifying the relevant tweets. A significant number of the tweets provide longitude and latitude information, and that information was automatically converted into country location. Finally, we hired a translator to help with texts and location information that is in Arabic, French, Hebrew and Turkish. This dataset was created using the Twitter archiving service TwapperKeeper (<http://twapperkeeper.com/>) to capture the flow of tweets from the Twitter Search API for Algeria, Egypt, Tunisia, Morocco and Yemen. The hashtags analyzed, in order, were "#algeria?", "#egypt?", "#feb14?", "#morocco?", "#sidibouzid?" The Muslim Brotherhood is actively developing its own social media sphere, with ikhwantube.com and ikhwanbook and ikhwanwikitube.com — Websites that offer much of the functionality of Western namesakes like YouTube and Facebook. Most central, we see: Facebook, Google, YouTube, CNN, Yahoo!, Blogger, .BBC, Flickr, Twitter and Wordpress