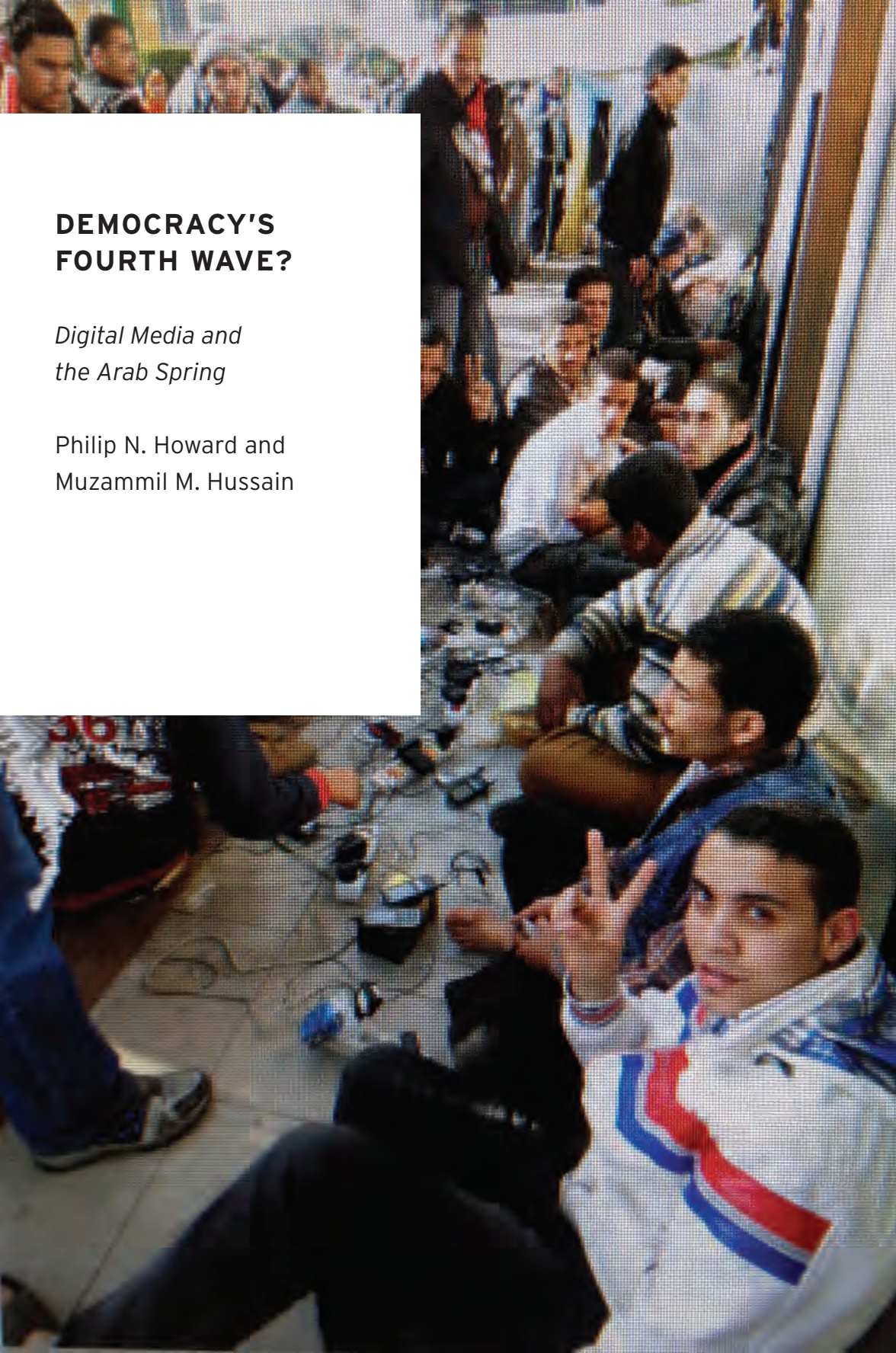


DEMOCRACY'S FOURTH WAVE?

*Digital Media and
the Arab Spring*

Philip N. Howard and
Muzammil M. Hussain



Democracy's Fourth Wave?

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The cover photograph was taken on Thursday, 10 February 2011, approximately 100 meters north of the Tahrir Square roundabout, the day President Mubarak enraged Egyptians by publicly refusing to step down. In response, thousands of young people began rapidly organizing for Friday, 11 February 2011, or the infamous “Friday of Departure” that ended with Mubarak’s resignation at 6 PM. This image speaks vividly to the intellectual themes of this book, but it also depicts the very real individuals who braved and sacrificed for more. For this photograph, we are grateful to Mr. Alisdare Hickson who endured harassment and detainment along with hundreds more. It is because of these individuals, documenting governmental brutalities and repression directly and intimately, that we have rich stories of victories to celebrate, losses to mourn, and lessons to glean. We have dedicated this book to them.

Philip N. Howard,
Princeton, New Jersey, United States

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Tunis, Tunisia

Introduction

During the Arab Spring, four of the world's most recalcitrant dictators—Zine el Abadine Ben Ali of Tunisia, Muammar Gaddafi of Libya, Ali Abdullah Saleh of Yemen, and Hosni Mubarak of Egypt—fell after decades in power. Each lost power after unparalleled levels of social protest—and sometimes armed conflict—called for an end to their tough regimes. The “Arab Spring” is what many international commentators are calling the cascading popular democracy movements that began in Tunisia, inspired Egypt, and consequently animated other movements across the region. Several autocrats have had to dismiss their cabinets. Discontent has cascaded over transnational networks of family and friends to Algeria, Jordan, Lebanon, and Yemen. Several countries remain in crisis, and in most of these countries it is not clear if the popular demand for change will result in new sustainable political institutions. Social protests in the Arab world have spread across North Africa and the Middle East, largely because digital media allowed communities to realize that they shared grievances and because they nurtured transportable strategies for mobilizing against dictators. But the early months of the Arab Spring were not about traditional political actors such as unions, political parties, or radical fundamentalists. These protests drew out networks of people, many of whom had not been as successful at political organization before: young entrepreneurs, government workers, women's groups, and the urban middle class.

Ben Ali ruled Tunisia for 20 years, Mubarak reigned in Egypt for 30 years, and Gaddafi held Libya in a tight grip for 40 years. Yet their bravest challengers were 20- and 30-year-olds without ideological baggage, violent intentions, or clear leadership. The groups that initiated and sustained protests had few meaningful experiences with public deliberation or voting and little experience with successful protests. However, these young activists were politically disciplined, pragmatic, and collaborative. Where do young people who grow

up in entrenched authoritarian regimes develop political aspirations? How do they learn about political life in other countries where faith and freedom co-exist?

The internet, mobile phones, and social networking applications have transformed politics across North Africa and the Middle East. By contextualizing and periodizing the past decade of Arab media systems and information infrastructure development, we can understand how, why, and to what effect this transformation occurred. The contemporary political uses of digital media and information-communication technologies did not erupt in a vacuum. Local and international civil society actors learned to leverage social media while autocratic regimes nurtured information management strategies to control and co-opt these social movements. Digital media use by multiple political actors and interests continue to shape emerging Arab media systems.

Where is social change possible through new communication networks? How have social movements operated across global contexts since the growth of digital media? Since the third wave of democratization, there are few regions with developing societies that remain non-democratic. These include the post-Soviet sphere, some cases in East and Southeast Asia, sub-Saharan Africa, and the Arab Middle East and North Africa. All of these regions have also consistently experienced economic liberalization and adoption of new information infrastructure, both of which have further globalized their societies' interactions with the rest of the world. Of the four regions with persistently non-democratic regimes, the Arab World has the largest number, with the greatest diversity in political culture, media systems, and socioeconomic makeup. What has made possible the rapid mobilization and collective protest action we have witnessed recently? In what ways have ICTs become integrated across the Arab World into the daily lives of its constituents? What role have regimes played in controlling, facilitating, or co-opting new information infrastructures? Last, what role did existing media systems, particularly broadcast networks, serve in connecting and transporting local images and discourses to the rest of the world?

Civil Society Online

Civil society actors have flourished online, largely because much of the internet's infrastructure is independent of state control. Civil society is often defined as a self-generating and self-supporting community of people who

share a normative order and volunteer to organize political, economic, or cultural activities that are independent of the state (Diamond 1994). Civil society groups are a crucial part of all democracies, concerned with public affairs yet autonomous from state bureaucracies so that government policy itself—and government corruption—fall within their purview. Civil society is constituted by a plurality of groups representing diverse perspectives and promoting those perspectives through communications media and cultural institutions. Moreover, a key tenet of the shared normative order is that no one group can claim to represent the whole of society, and that society is best served by a multitude of groups that contribute in different ways to the dissemination and exchange of information about public policy options and national development goals (Diamond 1994).

The importance of the internet for contemporary Arab civil society actors can be attributed to two factors: first, many groups were pushed online because other forms of political communication were inaccessible. Television commercials for advertising to the public were prohibitively expensive and regulated by the state. Radio commercials and newspaper ads were still beyond the budgets of most small civic groups and also similarly regulated by the state. The well-monitored broadcast media were a means by which the state and mainstream political parties regulated discourse. Second, the internet allowed for content to be hosted on servers beyond the control of state censors and afforded anonymity to those who advanced political criticism. During times of crisis, when physical spaces for public conversation and debate closed down, the internet provided virtual spaces for political communication.

Over the last decade, civil society organizations have been pulled online because of the internet's expanding user base and changing demographics of the internet-using population. In part, this was a function of falling costs: in the year 2000, the average resident of Cairo would have spent a quarter of his or her daily income on an hour of internet access at a cyber cafe. By 2010, around 5 percent of the average daily income would buy an hour of access at an internet access point (Howard and World Information Access Project 2007). In Egypt, civil society leaders have used the internet to reach out to foreign and domestic publics, build linkages with like-minded groups, raise funds from group membership, activate support in times of crisis, and provide social services. They also use the internet as a tool for critiquing the government and offering policy alternatives.

Even though a relatively small portion of the general population in these countries has internet access, the portion that is online is politically

Table I.1 Popular Protests for Democracy in North Africa and the Middle East, 2012, with Minor Political Outcomes

<i>Country</i>	<i>Ruler</i>	<i>Years of Rule</i>	<i>Wired Civil Society</i>	<i>Median Age of the Population</i>	<i>Levels of Protest for Popular Democracy and Political Outcomes</i>
Algeria	Abdelaziz Bouteflika	12	Moderate	28	50 casualties or fewer; two-decade state of emergency lifted
Djibouti	Ismaël Omar Guelleh	12	Small	21	50 casualties or fewer; 300 leaders arrested; election monitors expelled, opposition leaders arrested, no significant victories
Iran	Mahmoud Ahmadinejad	6	Large	26	50 casualties or fewer; 1,500+ arrests; no significant victories for opposition, government increased digital media censorship (Live, Google, Yahoo, Skype, Mozilla, and others)
Iraq	Nouri al-Maliki	5	Small	20	50 casualties or fewer, Prime Minister al-Maliki threatened to dismiss poorly performing ministries and hold provincial elections in near future (two years)
Lebanon	Michel Sulayman	3	Moderate	30	50 casualties or fewer; major resignations of opposition leaders led to governmental collapse
Mauritania	Mohamed Ould Abdel Aziz	2	Small	20	50 casualties or fewer; 50+ arrested, no significant political victories

Oman	Qaboos bin Said Al Said	41	Moderate	24	50 casualties or fewer; 150+ arrested; cabinet reshuffled; increases in student allowances, unemployment benefits, and retirement pensions
Palestinian Territories	Ismail Haniya (prime minister); Mahmoud Abbas (president)*	5	Large	18	50 casualties or fewer; hundreds injured; major protests [30,000+], Palestine applied for statehood with UN
Qatar	Emir Hamad bin Khalifa Al Thani	16	Small	31	No significant protests; Emir announced elections for Shura Council
Somalia	Sharif Sheikh Ahmed	2	Moderate	18	No significant protests
Sudan	Omar al-Bashir	18	Large	19	1 death, 70+ arrested, 20+ injuries; president announced that he will not run for 2015 election
Syria	Bashar Al-Assad	11	Large	22	Massive casualties [7,000+], massive injuries [15,000+], massive arrests [70,000+]; emergency law lifted, Supreme State Security Court abolished, tax cuts made, Kurds offered citizenship
UAE	Khalifa bin Zayid Al-Nuhayyan	7	Moderate	30	5 reform activists arrested, then pardoned

Source: News Reports during the Arab Spring protests

Table I.2 Popular Protests for Democracy in North Africa and the Middle East, 2012, with Major Political Outcomes

<i>Country</i>	<i>Ruler</i>	<i>Years of Rule</i>	<i>Wired Civil Society</i>	<i>Median Age of the Population</i>	<i>Levels of Protest for Popular Democracy and Political Outcomes</i>
Bahrain	Hamad bin Isa Al Khalifa	12	Moderate	31	Major protests [200,000+] and casualties [50–100], thousands of layoffs, arrests, and instances of torture; major increase in social spending (\$2,500+ per family), major suppression of opposition
Jordan	Abdullah II bin al-Hussein	12	Large	22	Major protests [8,000+], some injuries [50–100]; dismissal and replacement of cabinet, \$500 million in price cuts and salary increases, Public Gatherings Law reformed to allow unrestricted freedom of expression
Kuwait	Sheikh Sabah al-Ahmed al-Jabr al-Sabah	5	Small	30	50,000+ protesters; \$3,500+ per citizen with free food grant for one year
Morocco	Mohammed VI	12	Large	27	Low casualties [0–50], 150+ injured; commission established to draft new constitution, prime minister given power over cabinet, parliamentary elections held
Saudi Arabia	Abdullah bin Abd al-Aziz Al Saud	6	Moderate	25	4,000+ protesters offline, 25,000+ online; Low casualties [0–50], 150+ arrests; \$90 billion+ announced for public, women to have right to vote in 2015 municipal elections

Syria	Bashar Al-Assad	11	Large	22	Massive casualties [7,000+], massive injuries [15,000+], massive arrests [70,000+]; emergency law lifted, Supreme State Security Court abolished, tax cuts made, Kurds offered citizenship; over a year of civil war
<i>Regime Collapse</i>					
Egypt	Hosni Mubarak*	30	Large	24	10 million+ protestors; major casualties [1,000+], 6,500+ injured, 12,000+ arrested; ouster and prosecution of Mubarak and resignations of prime ministers Nazif and Shafik, dissolution of parliament, disbanding of state security services and former ruling party
Libya	Moammar Gaddafi	42	Small	25	Civil war and major casualties [7,000+]; eight months of civil war; overthrow of Gaddafi government
Tunisia	Zine el Abidine Ben Ali	24	Large	30	Moderate casualties [200+] and injuries [100+]; ouster of Ben Ali and prime minister, former ruling party disbanded, political prisoners released, democratic elections held
Yemen	Ali Abdullah Salih*	21	Small	18	Major casualties [1,800+], injuries [1,000+], and arrests [1,000+]; major resignations from ruling party and government

significant. Internet users are very often a developing country's wealthy and educated elites. They tend to be younger and live in capital cities and urban areas, and they tend to be among the most politically active. So the clients for civil society organizations, whether those organizations are faith-based, service oriented, or policy focused, are also potential members and supporters of civic agendas. The proliferation of consumer electronics has made it possible for civic leaders to reach new audiences, but this trend has also empowered local civil society "startups" to launch both small, permanent civic organizations and local, issue-specific campaigns. For example, online civil society was vibrant but constrained in Egypt, but growing and co-opted in Saudi Arabia.

Comparing Experiences across the Arab Spring

A focused, comparative analysis must take care to define the cases that are in the comparative set and to explain why some are out. In this cross-case, event-driven analysis, we look at the role of digital media in popular movements for democracy that have posed significant challenges to authoritarian rule in North Africa and the Middle East since early 2011. Indeed, we argue that the comparative method is the best approach to understanding the diverse, but still shared, experiences that Arab communities in the region have had with digital media and political change.

Activists around the world saw the creative ways in which protesters in North Africa and the Middle East used digital media, and other researchers have posited links between that region and subsequent protests in Spain, the United Kingdom, China, and elsewhere, including the global "Occupy" movement. So it is plausible that activist strategies and inspirations resonated beyond North Africa and the Middle East. But for the purpose of this comparative work we exclude these cases and focus on the Arab countries in North Africa and the Middle East. Tables I.1 and I.2 identify the countries studied in forthcoming chapters, with details about social movement activities. They are organized by their political outcomes.

Within these countries are a common set of languages, similar if not shared media systems, consistently authoritarian regimes, and rapidly increasing levels of technology diffusion. Palestinian frustration was directed at Israel, not the territorial government. Qatar had no major protests, but the government made concessions preemptively. The political opposition in Iran did

mobilize during the Arab Spring, but with less success than achieved during election protests in the summer of 2009. Despite the obvious diversity of these countries, three attributes make all 23 countries a useful comparison set: most of the countries have been slow to democratize, compared to the rest of the developing world; most of these countries have more rapid rates of technology diffusion than the rest of the world; and social elites in nearly all these countries use technologies to censor political culture and manage information flows in ways not often tolerated in the rest of the developing world, but with varying sophistication and success.

Furthermore, there are several modular political phenomena across nations with significant Arab populations: political action is largely based on the emulation of successful examples from others. This occurs through policy imitation and coordination among several Arab countries, especially with regard to telecommunications standards, technology-led economic development, and internet censorship. For several decades, interior ministers of Arab countries have held an annual conference to discuss successful ways of securing their regimes, and in recent years their agenda has extended to the best ways of handling media and internet censorship. But such imitation also occurs among communities of social elites and the leadership of democratization movements. As will be demonstrated in the chapters ahead, ruling elites learn about and imitate the successful strategies of their autocratic neighbors. At the same time, successful democratization strategies are sometimes transported into the collective action strategies of movements in other countries. Through regionalized processes of elite learning and defection, Arab countries seem to democratize in similar ways, not necessarily following the recipes for democratization that have been followed in other regions and at other time periods. Across many Arab countries, democratization movements appear to be learning to use information-communication technologies from each other, linking up to share experiences, and transporting successful organizational strategies. Yet these modular political phenomena are not just found among social movements: state bureaucracies learn censorship strategies from each other, political parties in Arab countries learn how to use ICT's from sympathetic parties in other countries, and part-time and full-time journalists learn new online research and publishing strategies from each other.

Second, many Arab countries have shared technology diffusion patterns and similar systems of political communication, which are together distinct from those in other developing countries. Holding economic wealth constant,

Arab countries have among the highest rates of technology adoption in the developing world. Moreover, many Arab governments have responded to the new information technologies in consistent ways: censorship strategies have been developed with similar objectives of cultural control, internet service providers are held legally responsible for the content that flows over their networks, and government agencies work aggressively to support (often “Islamic”) cultural content online. There are, of course, interesting differences among the countries that may account for why digital media were important for political mobilization in some places and not others. Some of these countries have significant fuel economies, others do not (rentier states have long been shown to easily subsidize massive welfare and state security organizations to serve regime interests). Some have high levels of digital media use, others do not. The character of authoritarian regimes also varies, with constitutional monarchies, secular regimes, and states with so little capacity to govern that they are not even very good at being authoritarian.

Causality and Context

In a sense, all methods are comparative. Research that involves large numbers of cases often involves statistical manipulations that are designed to reduce the number of explanatory variables while expanding the population of cases explained. Even individual country case studies involve some general comparisons to neighboring countries or earlier time periods, or involve setting the particular case into sharp relief against global trends. We do not believe it is useful to compare the Arab Spring to the French Revolution or Russian Revolution. Instead, we seek to compare social movement activities and political outcomes within the region, within the current temporalities of technological and technocratic change. In comparative communication research, our goal is to examine media systems, technology diffusion patterns, the political economy of news, journalism cultures, and technology and telecommunications policy (including engineering standards and intellectual property law). The goal of this book is not a general introduction to the Arab Spring, and readers looking for such an introduction might turn to the collection of essays printed by the Council on Foreign Relations or Marc Lynch’s well-considered *The Arab Uprising* (Council on Foreign Relations 2011; Lynch 2012). Our book takes a focused look at the role of digital media during the Arab Spring. But making digital media

the entry point for an investigation of the causes of the Arab Spring does not mean that we are only interested in the internet, or mobile phones. In fact, studying the media has come to mean understanding a wide range of technological affordances, telecommunications policies, and cultures of use. Our definition of digital media is a deliberately extensive one: digital media consist of (a) the information infrastructure and tools used to produce and distribute content that has individual value but reflects shared values; (b) the content that takes the digital form of personal messages, news, and ideas, that becomes cultural products; and (c) the people, organizations, and industries that produce and consume both the tools and the content (Howard and Parks 2012).

The tendency among pundits and the popular press is either to make strong arguments about how digital media “caused” the Arab Spring or to dismiss even the possibility of such a causal role with passing reference to the difficulty of agreeing on what causality means. Some argue that information technologies may have had a role but that there were more important *singular factors* at play. We believe—and this is the reason for this study—that it makes more sense to look for combinations of causal factors. Sometimes researchers call these conjoined causal explanations, and they allow for both the preservation of some nuance specific to particular cases and the ability to generalize about a causal recipe that may be transportable to other cases. Our goal is not one explanation but a few parsimonious explanations that cover the most cases in the most sensible ways. We are less interested in the philosophical debate about the nature of causality and more interested in the social consequences of technology use that can be observed by studying a few cases in deep ways. We seek to understand the context of political mobilization in a relatively small set of countries in recent years, and we have relatively nuanced research questions. We do not seek to understand whether technology diffusion causes democratization, because there are some obvious differences in country contexts and a range of political outcomes from the Arab Spring. But when did digital media become an important means of social mobilization, and when did digital media use have political consequences? In other words, when were digital media one of the conjoined causal combinations of factors that explained political outcomes, and when were they irrelevant? It may be that the causal combinations vary by country but that the one consistent component is digital media. We address this specific question at length in the conclusion, but after developing our framework and perspective in the preceding chapters.

Outline of the Book

Our argument proceeds by reviewing what we already know about digital media and social change. Chapter 1 sets the stage for the Arab Spring and provides a narrative that connects online with offline actions, describes practices of technology use and digital storytelling that have diffused across the region, and demonstrates how key political events had technological components and how important technological interventions had political consequences. We also provide a sequence of events during the Arab Spring, highlighting the significant moments at which digital media had a role in the evolution of the revolutions. The goal of this chapter is not to provide the definitive history of these events but to offer a “media history” of the events. Understanding the timeline of events through the lens of digital media is an important first step, and in subsequent chapters we refer to this timeline to demonstrate the larger mechanics of protest organization, regime response, and the political economy of news.

Chapter 2 privileges the stories of civic leaders, bold activists, and regular citizens who risked much to contest authoritarian rule in their respective countries. This chapter celebrates the creative work of small groups of tech-savvy protesters who managed to have a significant impact on the opportunity structure for opposition leaders. But it also critiques their work, identifying some of their failures, uncertain successes, and problematic outcomes.

Chapter 3 works to tell the longer history of digital media and dissent. Many of the countries in this region are notable for not having, in decades, a large public mobilization for democratic change. But these countries have all had political activists and opposition groups. The Arab Spring was not their first attempt at mobilization, nor was it their first attempt to use digital media to awaken public sentiments. But in the spirit of technologically based innovation, many of these contemporary successes were beta versions of past failures and lessons learned. The Arab Spring may have been their most successful effort to date to use digital media to rally public support, but this chapter serves to set the context preceding the events of early 2011—especially also to highlight how strategies and challenges may evolve in the future.

Subsequently, Chapter 4 investigates the response of authoritarian regimes. During the heady weeks of protest, authoritarian governments responded sometimes with concessions, and then sometimes with violent crackdowns. But every single government that faced public protest, regardless of regime type, had some kind of digital-response strategy. There was a range of

responses, some more sophisticated than others, and we explore which, to what effect, and why.

Chapter 5 is about Al Jazeera and the changing political economy of news in the region. Social media and consumer electronics have wrought havoc on news markets, and indeed the relationship between news consumer and news producer is now blurred. Al Jazeera became one of the most innovative news agencies during the Arab Spring, using social media to disseminate fresh content to the rest of the world and bringing feedback from outsiders to desperate activists. This chapter demonstrates how, at key moments, the social media strategy of Al Jazeera not only raised its profile as a credible news organization but also increased its clout as a political actor in the domestic game of opinion formation in several parts of the region.

The final chapter offers a conservative list of the conclusions we can make about the role of digital media in the Arab Spring, bolstered by a fuzzy-set analysis of the causes and consequences, successes and failures of national uprisings. The Western news media played up technology use in reporting from the region. Bloggers and tech-savvy activists promoted their role in leading popular protest, perhaps obscuring the traditional methods and structures of protest that were at work. But what are the most reasonable things we can conclude by comparing popular protest movements from this moment across several countries? In which countries did digital media have a role in the success of social movement mobilization, and in which countries were social movements successful but not really as a result of technology diffusion? We conclude that certain recipes strongly corroborate the technological conditions under which regimes sustained their durability, particularly their level of censorship sophistication, as well as the presence of key technology factors that assisted the interests of social movements, especially access to mobile telephony.

1

Digital Media and the Arab Spring

It has been 15 years since the last “wave” of democratization. Between 1989 and 1995, many remnants of the Soviet Union and failed authoritarian regimes in other parts of the world turned themselves into variously functional electoral democracies. By 2010, roughly three in every five states held some democratic form (Diamond 2009). Certainly there were also large, important countries that made few efforts at democratization, strategically important states run by hereditary rulers, and other states that seemed to be slipping, sliding, or teetering on the edge of dictatorship. But as a region, North Africa and the Middle East were noticeably devoid of popular democracy movements—until the early months of 2011.

Between January and April 2011, public demand for political reform cascaded from Tunis to Cairo, Sanaa, Amman, and Manama. This inspired people in Casablanca, Damascus, Tripoli, and dozens of other secondary cities to take to the streets to demand change. By May, the political casualties were significant: Tunisia’s Zine el Abidine Ben Ali and Egypt’s Hosni Mubarak, two of the region’s most recalcitrant dictators, were gone; Libya was locked in a civil war; and several constitutional monarchs had sacked their cabinets and committed to constitutional reforms (and some several times over). Governments around the region had sought peace by promising their citizens hundreds of billions of dollars in new spending measures for infrastructure projects, family and unemployment benefits, free or subsidized food, salary increases for civil servants and military personnel, tax cuts, affordable-housing subsidies, and social security programs. Morocco and Saudi Arabia appeared to fend off serious domestic uprisings, but the outcomes for other regimes were far from certain. Democratization movements had existed long before technologies such as mobile phones and the internet came to these countries. But with these technologies, people sharing an interest in democracy built extensive networks,

created social capital, and organized political action; virtual networks materialized in the streets. Brave citizens made their shared opposition to authoritarian rule known, and digital media helped to accelerate the pace of revolution and build its constituency. Digital media served as an “information equalizer,” so described by Seib, allowing for both the telling of compelling stories and the management of all the small communications and logistics tasks that must happen in concert if an uprising is to succeed (Seib 2008).

There are many ways to tell the story of political change. But one of the most consistent narratives from civil society leaders has been that the internet, mobile phones, and applications such as Facebook, Twitter, and other social media made the difference, this time. Digital media provided the important new tools that allowed social movements to accomplish political goals that had previously been unachievable. And judging by the reactions of dictators and other desperate political elites, digital media have become an important part of a modern counterinsurgency strategy. Looking back over the last few months, what concrete things can we say about the role of digital media in political uprisings and democratization during the Arab Spring? What do the events of that time reveal about the contemporary narrative arc of democratization? What implications do the events of the Arab Spring bear for our understanding of how democratization actually works today?

Tunisian Origins

On December 17, 2010, Mohamed Bouazizi set himself on fire. This young street vendor had tried in vain to fight an inspector's small fine, appealing first to the police, then to municipal authorities, and then to the region's governor. At each appeal he had been physically beaten by security officials. Bruised, humiliated, and frustrated by an unresponsive bureaucracy and thuggish security apparatus, Bouazizi set himself alight in front of the governor's office. By the time he died in a local hospital on January 4, protests had spread to cities throughout the country. It is not enough to say that news of Bouazizi's tragic death traveled quickly, because the state-run media did not cover his death or the simmering hatred in the city of Sidi Bouzid. During those angry weeks in December, it was through blogs and text messages that Tunisians experienced what McAdam has called a “cognitive liberation”; networks of family and friends, feeling sympathy for the dying man's plight, came to realize that they shared common grievances (McAdam 1982). The realization grew as people

watched and uploaded YouTube videos about the abusive state, read foreign news coverage of political corruption online, and shared jokes about their aging dictators over the short messaging services (SMS) of mobile phone networks. Through communication networks beyond state control, people crafted strategies for action and a collective goal: to depose their despot.

For many years, the most direct accusations of political corruption had come from the blogosphere (Jurkiewicz 2010). Pretty much the only investigative journalism into questionable policies and government corruption came from average citizens using the internet in creative ways. Most famous is the graphically simple video of the Tunisian president's plane arriving and leaving Europe's elite shopping destinations with his wife as the only passenger. Following the online publication of this video, the regime vigorously cracked down on YouTube, Facebook, and other online applications. In fact, since 1995 Tunisia has interfered with digital networks for political reasons more times than almost any other state. But a cottage industry of bloggers and activists took to the internet to produce alternative newscasts, create virtual spaces for anonymous conversation about public policy, and commiserate about state persecution. The critics of Ben Ali, president of Tunisia, dominated virtual spaces, but after Bouazizi's death, these critics began occupying public spaces. Shamseddine Abidi, a 29-year-old interior designer, posted regular videos and updates to Facebook, and Al Jazeera used the content to carry news of events to the world. Images of Bouazizi, hospitalized with burns, passed along networks of family and friends, and eventually strangers. An aggressive internet campaign called on fellow citizens and unions to set up committees to support the uprising in Sidi Bouzid. Lawyers and student unions were among the first to move into the streets in an organized way.

The government tried to ban Facebook, Twitter, and video sites such as DailyMotion and YouTube. But within a few days SMS networks were the organizing tool of choice. Less than 20 percent of the overall population actively used social media websites, but almost everyone had access to a mobile phone. Outside the country, the hacker communities of Anonymous and Telecomix helped to cripple government operations with their "Operation Tunisia" denial-of-service attacks, and by building new software to help activists get around state firewalls. The government tried to respond with a counterinsurgency strategy against its tech-savvy opponents, jailing a group of known bloggers in early January. For the most part, however, the political uprising was leaderless in the classical sense—there was no long-standing revolutionary figurehead, traditional opposition leader, or charismatic speechmaker who

radicalized the public. But there were prominent nodes in the digital networks, people whose contributions held sway and mobilized turnout. Slim Amamou blogged the revolution (and later took a post in the national unity government and the Arab World's first "Pirate Party"). Sami Ben Gharbia, a Tunisian exile, monitored online censorship attempts and advertised work-arounds. "El Général," a middle-class Tunisian rapper, streamed digital "soundtracks for the revolution."

By early January, urgent appeals for help and amateur mobile phone videos were streaming across North Africa. Ben Ali's position seemed precarious. There were major protests in Algeria, along with several additional self-immolations across the region. Again, the state-run news media covered little about events in neighboring Tunisia. The Algerian government tried to block internet access and Facebook use as traffic about public outrage next door increased. But with all the private submarine cables running to Europe, there was no mandatory point of passage for information flows that the Algerian government could shut down. When that government also became a target for the hackers, Anonymous, state information infrastructure suffered. By the time Ben Ali fled Tunisia on January 14, active campaigns for civil disobedience against authoritarian rule were growing in Jordan, Oman, and Yemen. In other countries, such as Lebanon, Mauritania, Saudi Arabia, and Sudan, minor protests erupted on a range of issues and triggered quick concessions or had little impact. But even opposition leaders in these countries drew direct inspiration from what they were tracking in Tunisia. Moreover, opposition leaders across the region were learning the digital tricks for how to catch their ruling elites off guard. Compared to Tunisia, only Egypt's civil society, politically active and cautiously observing developments in Tunisia, was more wired. The stories of success in Tunisia, which soon became more apparent, helped inspire the largest protests in Cairo in 30 years.

Egypt, Inspired

In Egypt, almost everyone has access to a mobile phone. Overall, the country has the largest internet-using population in the region, second only to that of Iran (although Iran is technically not part of the "Arab World"). This meant that news of Ben Ali's departure spread rapidly through Egypt's social strata. The specific news of his departure was covered, reluctantly, by state-run media. But the same state-run media had been slow to broadcast news of the protests in the region earlier in the month, and parallel protests in Cairo. Like Tunisia,

Egypt has long had a large and active online public sphere. It is here that illegal political parties, radical fundamentalists, investigative journalists, and disaffected citizens interacted. When the Muslim Brotherhood's online news services were banned in Egypt, they moved their server infrastructure to London and kept up their flow of online deliberations and political spin. But it was not the established parties and unions that converted anti-Mubarak vitriol into civil disobedience. It was the campaign to memorialize a murdered blogger.

Wael Ghonim, a regional executive at Google, started the Facebook group, "We are all Khaled Said," to keep alive the memory of a young blogger who had been beaten to death by police for exposing their corruption. Just as digital images of Bouazizi in the hospital passed over networks of family and friends in Egypt, an image of Khaled's bruised face, taken as his body lay in a city morgue, passed from one mobile phone to another, until thousands had seen the picture and were actively developing protest strategies online. And just as videos of a young girl dying in the streets of Tehran had inspired hundreds of thousands of people to take to the streets in the summer of 2009, the webpage to memorialize Said became a portal for collective commiseration. But more than being a digital memorial—Egyptian police have long tormented bloggers—this webpage became a logistical tool and, at least temporarily, a very strong source of community. Ghonim fast became the country's most prominent Tweeter, linking a massive Egyptian social network writing in Arabic with networks of interested English-speaking observers overseas.

The first occupants of Tahrir Square shared many of the hopes and aspirations of their counterparts in Tunis. They were a community of like-minded individuals with similar backgrounds: underemployed, educated, eager for change, but exhausted by the religious fervor and political ideologies of past decades (Bayat 2007). They found solidarity through digital media and used their mobile phones to call their social networks into the streets. Protests escalated quickly. Both government analysts and outsiders were surprised that such a large network of relatively liberal, middle class, peaceful citizens would mobilize against Mubarak so rapidly. The traditional Islamists, opposition parties, and union organizations were there, but liberal and civil society voices dominated the digital conversation about events and the public stages in squares around Cairo during the igniting phases. News and speeches from Mubarak, Obama, and regional leaders were streamed live to phones and laptops throughout the square.

Mubarak tried to disconnect his citizens from the global information infrastructure in the last week of January. It was a desperate maneuver with mixed impact. A small group of tech-savvy students and civil society leaders had

organized satellite phones and dial-up connections to Israel and Europe, so they were able to keep up strong links to the rest of the world. And it appears that some of the telecommunications engineers acted slowly on the order to choke off internet access. The first large internet service provider was asked to shut down on Friday, January 28, but engineers didn't get to it until Saturday. Other providers responded quickly but returned to normal service on Monday. The amount of bandwidth going into Egypt certainly dropped off for four days, but it was not the information blackout Mubarak had asked for. Taking down the nation's information infrastructure also crippled government agencies. The people most affected were middle-class Egyptians, who were cut off from internet service at home. Some people stayed there, isolated and uncertain about the status of their friends and family. But in the absence of information about the crisis, others took to the streets, eager to learn what was going on.

A few days later, the Egyptian security services began using Facebook and Twitter as a source of information for a counterinsurgency strategy. They used social media alerts to anticipate the movements of individual activists. They abducted Ghonim once his Facebook group topped 300,000 people (it is now well over 2 million). Digital media helped afford not only a cascade of civil disobedience across the communities living under Egypt's unflappable dictator but it also made for a unique means of civic organization that was observed, modified, and replicated around the region.

The Digital Contagion of Democracy

Digital media brought the details of social mobilization—and success—against the strongmen of Tunisia and Egypt cascading across the region. Although many analysts did not foresee the Arab Spring, there was evidence that Egypt, Tunisia, and other countries shared features with others that had experienced technology-enabled democratization in recent years (Howard 2010). As images of Bouazizi in the hospital, burned and bandaged, circulated beyond Tunisia, his act of self-immolation inspired similar actions in Algeria, Egypt, Morocco, Mauritania, Jordan, Saudi Arabia, Syria, and Iraq.

As in Tunisia and Egypt, authorities in Algeria, Bahrain, Saudi Arabia, Syria, and Libya tried to stifle digital traffic about the prospects for domestic political change. These governments also actively targeted bloggers for arrest, beatings, and harassment. It is clear that digital media have had an important role in changing the system of political communication during sensitive moments in

regime transition. Images of jubilant protesters in Tunisia and Egypt inspired others across the region. Facebook provided an invaluable logistical infrastructure for the initial stages of protest in each country. Text-messaging systems fed people in and outside these countries with information about where the action was, where the abuses were, and what the next steps would be.

Within a few weeks there were widely circulating online tip sheets on how to pull off a successful protest. The *Atlantic Monthly* translated and hosted an “Activist Action Plan,” boingboing.net provided guidelines for protecting anonymity online, and Telecomix circulated methods for using landlines to circumvent state blockages of broadband networks. Through Google Earth, Bahrain’s Shia population mapped and aggregated photos of the Sunni ruling minority’s opulent royal palaces while many people lived in single-room houses with 17-member families. Digital media provided both an awareness of shared grievances and transportable strategies for action.

Prominent human rights blogger Mahmood al-Yousif tweeted during his arrest, instantly linking up the existing networks of local democratization activists such as @OnlineBahrain with international observers through @BahrainRights. In Libya, the first assertion of a competing political authority came online, on a website declaring an alternative government in the form of the Interim Transitional National Council. One of Gaddafi’s senior advisors defected by tweeting his resignation and advising Gaddafi to flee.

Algerians with the same levels of dissatisfaction over economic prospects found in Tunisia and Egypt broke out in protest in much the same way. Salima Ghezali, a leading Algerian activist, told Al Jazeera in a phone interview that this outbreak of protest was “both very local and very global.” Union-led strikes had been common for decades, but protests of this scale had not occurred since 1991. Algerian protesters were not among the most tech-savvy in the region, but before the country’s state-run media reported on local protests or Mubarak’s resignation, many residents in Algiers had already received the inspirational news by SMS.

Digital Contexts, Political Consequences

The range of consequence across Arab regimes and leaders varied widely but were nonetheless severe. Tunisia’s Ben Ali and Egypt’s Mubarak were removed peacefully, while Libya’s Gaddafi was killed by rebel fighters, Yemen’s Saleh fled his country, and Syria’s Assad has been embattled in a civil war (see Figure 1.1).



Figure 1.1 Four Dictators—Ben Ali, Saleh, Gaddafi, and Mubarak—before the Arab Spring. (AP Photo/Amr Nabil)

The Algerian government removed its incongruous 19-year state of emergency. Oman's elected legislature got the authority to pass laws. Sudan's war criminal president promised not to seek reelection. All the oil-rich states committed to wealth redistribution or the extension of welfare services.

But real-world politics is not just what happens offline. A classically trained social scientist trying to explain the Arab Spring would point to statistics on the youth bulge, declining economic productivity, rising wealth concentration, high unemployment, and low quality of life. These explanatory factors are often part of the story of social change. It does not diminish their important causal contribution to the Arab Spring to also say that digital media shaped events and outcomes: digital media were singularly powerful in getting out protest messages, in driving the coverage by mainstream broadcasters, in connecting frustrated citizens, and in helping them realize that they shared grievances and could act together to do something about their situation. Indeed, digital media may be among the most proximate of causes because the motivations for protest against authoritarian rule alone had been insufficient for years. It never makes sense to look for simple, solitary causes of revolution. But if the people behind these

diverse movements had different reasons to hate their dictators, digital media use may be one of the most consistent parts of the uprising narrative across countries.

Certainly, many journalists have focused on the visible technological tactics that seemed to bring so much success rather than looking at the root causes of social discontent. But this does not mean that information technologies should be excluded from the causal conditions of social discontent. Indeed, social discontent is not just a list of grievances. Collective grievances gestate, and people have to come to agreement on what those grievances are. In the last few years, this gestation process occurred online, particularly in Tunisia, Egypt, and Bahrain. Social discontent took on an organizational form and was ultimately translated online into actionable strategies and achievable goals. In the last few months, this translation process has occurred over mobile phones and social-networking applications, even in countries that are usually very good at co-opting or suppressing opposition, such as Syria, Yemen, and Saudi Arabia.

Indeed, the range of grievances varied significantly from country to country. Dissent existed in these countries long before the internet. But digital media helped turn individualized, localized, and community-specific dissent into a structured movement with a collective consciousness about both shared plights and opportunities for action. It makes more sense to think of conjoined causal combinations: the strength of existing opposition movements, the ability of the regime to buy off opposition leaders, and the use of digital media to build opposition networks. It may be that causal combinations vary but that the one consistent component is digital media.

Broadly speaking, the internet has provided a means and a medium for political resistance across countries. There are several ways in which the new information infrastructure has had an impact on political communication and public opinion formation. These countries, with very different histories and very diverse political cultures, have experienced similar changes to their systems of political communication since the advent of digital technologies. Even though these regimes are very different, we offer propositions about how they have opened up in recent years, largely due to the proliferation of digital and networked information technologies. In most countries where online news use has been surveyed, researchers have found that the number of people who use the internet for political news and information peaks in times of crisis or during elections but that most of the time only a fraction of active internet users regularly consume news.

Understanding This Wave

It may be premature to call these events a wave of democratization since political outcomes are uncertain and sustainable institutions take years, if not decades, to build. Yet opposition to authoritarian rule was the consistent collective action goal across the region. Social movement leaders actively sought training and advice from the leaders of democratization movements in other countries, and rhetorical appeals for civil liberty appeared consistently from protest to protest. Either way, what are the phases of this latest “wave” of political change?

Looking back over the last 15 years, we can safely say that digital media has—in different ways—become a necessary and sometimes sufficient cause of democratization (Howard 2010). Looking back over the first three months of 2011, there appear to be five phases to the story of digital media and the Arab Spring: The first is a *preparation* phase that involves activists using digital media in creative ways to find each other, build solidarity around shared grievances, and identify collective political goals. The *ignition* phase that follows involves some inciting incident, ignored by the mainstream state-controlled media, that circulates digitally and enrages the public. Next comes a phase of *street protests* that are coordinated digitally. A phase of *international buy-in*, during which digital media are used to draw in international governments, global diasporas, and especially overseas news agencies is next. This all culminates in a *climax* phase in which the state either cracks down and protesters are forced to go home (Bahrain, Iran), rulers concede and meet public demands (Egypt, Tunisia), or groups reach a protracted stalemate (Libya, Syria) and a final denouement of post-protest information in an ideological war between the winners and losers of any resulting social change.

Across the region, the buildup to political upheaval involved the erosion of regime credibility through investigative research into corrupt practices. For most of the constitutional monarchies, military rulers, and strongmen of the region, the internet is the only place to find their critics. Blogs, news organization websites, Twitter feeds, and political listservs are where many women debate on equal footing with men, where policy alternatives are discussed, and where regime secrets are exposed. The buildup to the physical occupation of a central square is actually a fairly quiet process of proliferating mobile phones and internet access. The arrival of new digital technologies becomes an occasion for restructuring the way individuals produce and consume content, so that when a political crisis is ignited, the new habits of technology use are

already in place. Many authoritarian governments use some form of social network strategy to surveil their public—Libya’s Jamahiriya domestic surveillance committees involved between 10 and 20 percent of the population (Bureau of Democracy, Human Rights and Labor 2005). As technologies such as mobile phones and the internet proliferated and social media websites drew more users, individuals began to assert greater control over their own social networks.

Since 2000, technology proliferation has been particularly rapid in the Arab world. This has resulted in improved informational literacy, particularly in large cities. More people began to get news from overseas and to reconnect with friends and family abroad. It is not that Tunisians and Egyptians decided to have political protests and turned to digital media for logistical support. They were already a relatively wired population who actively maintained their social networks with digital media and then turned to the media they knew best to organize protest. Digital media became a proximate cause of political revolution precisely *because* a significant community of users was already comfortable using digital media before the crisis began. It may seem that digital media use in times of political crisis is new. But for the residents of Tunis, Cairo, and other capitals, it is the everydayness of mobile phones that makes the technology a proximate cause of revolution.

Still, modern democratic activists do get formally trained in working with consumer electronics. Recently, the US Congress approved \$30 million to the US Department of State to train more than 5,000 digital activists around the world (Gaouette and Greeley 2011), and the Dutch Foreign Ministry has promised another €6 million, while other Western democratic governments are following suit. General “how-to” websites have become useful resources for activist guides, like “How to Set Up a Dial-up Server.” The Alliance of Youth Movements developed a timely list of activities that sympathetic publics abroad could participate in to help Egyptians connect. There were guides to launching a local Facebook protest and sharing images, helping Egyptians dial up through Telecomix, redirecting Egyptian ham-radio signals to Twitter, running relays to increase activists’ anonymity, or petitioning Vodafone to reopen their mobile networks in Egypt.

The ignition of popular protest is often a few specific acts of violence, carried out by security services, which are captured and memorialized online but ignored in state-run broadcast media. Much thought goes into choosing the day for rhetorically useful events. These deliberations happen online. There is an incident that is usually not covered by the mainstream broadcast media.

But it is covered by participants who generate their own buzz through digital media. In Tunisia, the inciting incident was not just Bouazizi's self-immolation. In Egypt it was not just Khaled Said's death, or the inspiring success of protest in Tunisia. It was the participatory creation of news and discussion about these events by networks of family, friends, and then strangers when the state-run broadcast media did not air coverage of such activism. When Al Jazeera did not cover the digital activism in Syria, civic leaders there lobbied to have it covered. Al Jazeera produced a long documentary and featured Syrian activist content on its website. Consequently, interest in Syria's opposition movement—both within the country and across the region—grew rapidly.

Oddly enough, the ignition of social protest in this latest wave of political upheaval does not seem to come with recognizable leaders. Charismatic ideologues, labor leaders, religious spokespeople, and eloquent nationalists were noticeably absent in the first days of uprisings. For Tunisia, the ignition of civic discontent was likely Bouazizi's suicide. For Egypt, the eruption of collective dissatisfaction was probably the brazen example of Tunisian citizens and their ultimate success, inspiration that came over digital networks of family and friends from Tunis. For the rest of the region, both countries served as examples of success, stories carried by the digital networks of social media and Al Jazeera. Eventually, formal political actors and public figures joined in.

After ignition, the street battles of political upheaval began, albeit in a unique way. Most of the protests in most of the countries analyzed here were organized in unexpected ways that made it difficult for states to respond. Demonstrators were relatively leaderless and not dominated by unions, existing political parties, clear political ideologies, or religious fervor. The street phase of social protest involved a strategic use of Facebook, Twitter, and other sites to identify the times and locations for civic action. Regimes sometimes adapted to this kind of planning and used the very same social media sites to track who would be mobilizing where or to block particular pages and applications at chosen moments. Syria has blocked Facebook and Twitter on and off since 2007, but the government opened access in the midst of political protest, possibly as a way of tracking and entrapping activists.

Activists were well aware of state-surveillance efforts, directing each other to email, and urging one another not to post sensitive organizational details publicly on Facebook and Twitter. When the Libyan government blocked Facebook, activists took to Muslim dating websites and used the romantic language of courtship and dates to mask their planning for face-to-face meetings and protests. When state officials in Syria started spreading

misinformation over Twitter, activists used Google Maps to self-monitor and verify trusted sources. More often than not, the state simply mismanaged information technologies in ways that allowed savvy activists to perform creative workarounds. Mubarak disabled Egypt's broadband infrastructure but left satellite and landline links alone. Gaddafi tried to disable his country's mobile phone networks, but with multiple decentralized home-location registers—including a key node in the eastern city of Benghazi—rebels were able to reinstate the national registry showing which phone numbers linked to which phones.

News coverage of events in the region regularly revealed citizens using their mobile phone cameras to document events—especially their own participation. In Tahrir Square, tank commanders took photos of the crowds and shared them on their social networks. The occupants of Tahrir Square took photos of the tanks, too. When army vehicles were abandoned, people took pictures of themselves in the vehicles for their Facebook pages. People who were arrested took pictures of themselves in custody. Some Egyptians openly speculated that the reason the army did not systematically act against protesters was because soldiers knew they were being constantly photographed and were suddenly aware of their socially proximate connection to the occupants of the square. In countries where the army was ordered to respond more aggressively, the carnage was still documented. YouTube had to develop a special waiver to its usual policy of not publicizing culturally offensive gore to allow the shocking user content being submitted by users in the field of action to go live.

Contemporary political opposition must eventually take the step of seeking international buy-in, and this, too, has become a digitally mediated process. Domestic turmoil can eventually capture international attention. Of course, the degree to which a popular uprising finds an international audience depends on the strategic relationship with the West and also on the proximity of social media networks. Most technology users do not have the sophistication to work around state firewalls or keep up anonymous and confidential communications online. But in each country, a handful of tech-savvy students and civil society leaders do have these skills, and they used them well during the Arab Spring. Learning from other democracy activists elsewhere, these information brokers used satellite phones, direct landline connections to internet service providers (ISPs) in Israel and Europe, and a suite of anonymization software tools to supply the international media with pictures of events on the ground, even when desperate dictators attempted to shut down national ISPs.

The political climax of uprising takes the form of state crackdowns or major concessions to popular demands that can include executive turnover. Stalemates between protesters and ruling elites can result in protracted battles. But in each country, the political climax of uprising can also be marked by a clumsy attempt by the state to disconnect its own people from digital communications networks. Banning access to social media websites, powering down mobile phone towers, and disconnecting internet exchange points in major cities are the desperate strategies an authoritarian government uses for reasserting control. And there are serious economic consequences to disconnecting a nation from global information infrastructures, even temporarily. Interrupting digital services cost Egypt's economy at least \$90 million and damaged the country's reputation among technology firms as a stable place for investment. In Tunisia it was activist hackers—"hacktivists"—who did the most economic damage by taking down the stock exchange.

Counterinsurgency campaigns have digital components: by the end of April, activists in Bahrain, Morocco, and Syria had battled to dominate their country's Twitter hashtags, which pro-regime advocates used to push out links to photographs of national monuments and soccer statistics. During critical moments, it can be difficult to tell whether the regime is shutting down mobile phone networks or if digital switches are just being jammed from high use by overworked systems. In either case, the peak moments of crisis are marked by exceptionally poor connectivity—through crushing demand or regime interference. In many of these telecommunications markets, the outcomes are the same: regimes crack down on the largest providers; demand peaks and is rerouted to the few small available digital switches. States either crack down successfully; protesters and elites reach a stalemate with protracted, digital battles; or rulers concede and meet public demands.

Whether the state crackdown sends people home or the protesters send a dictator packing, there is a post-protest information war. Once Mubarak left, the State Security Investigative Service, Egypt's security service, did its best to destroy its organizational archives, though some records leaked online. The websites of activists became portals for constant critique of whoever led the temporary or transitional government. Losers, whether elites or activists, were driven offline and their content became more difficult to find. Outsiders were quickly called to task for the side they took or their opinions on the future. When US Secretary of State Hillary Clinton was booked for a web chat with a popular Egyptian website, 6,500 questions were submitted in two days. By the

time the protests were over, a few of the digerati found that they had become newly prominent political figures.

Traditional media sources have also had an important role in the Arab Spring. A key feature of authoritarian rule is that dictators appoint news editors. During the days of uncertainty in Egypt, Mubarak and his information minister, Anas el-Fiqqi, called television anchors personally to berate them for unflattering coverage. And satellite television has done much to create a strong sense of transnational identity in the region. Of the existing news media organizations, Al Jazeera was certainly the most influential because it was the most high-profile regional source of news. For example, Al Jazeera's Dima Khatib was the most prominent commentator on Tunisia when the country erupted, and she served as a key information broker for the revolution through Twitter. Al Jazeera had an exceptionally innovative new media team that converted its traditional news product for use on social media sites and made good use of the existing social networks of its online users. But a key aspect of its success was its use of digital media to collect information and images from countries where its journalists had been harassed or banned. These digital networks gave Al Jazeera's journalists access to more sources and a second life to their news products. Indeed, the actual use of social media has become a news peg, with analysts eager to play with the meme of technology-induced political change.

Regime responses vary in sophistication but often seem several paces behind civil society in terms of technology use. In February, during one of his televised speeches, Muammar Gaddafi lost his train of thought when an aide drew his attention to real-time coverage of his rant. Gaddafi had simply never encountered such instant feedback from a source that could not easily be silenced or punished. Now that protests are dying down in Bahrain, the regime knows where the security holes in its telecommunications network lie. Saudi Arabia has bolstered its server infrastructure so that all traffic flows through internet-exchange points in Riyadh, and online content is monitored closely through censorship software and crowd-sourced monitoring.

It is a mistake to build a theory of democratization around a particular kind of software, a single website, or one piece of hardware. It is also erroneous to label these social events Twitter, Facebook, or Wikileaks Revolutions (Dickinson 2011; Sullivan 2011; Taylor 2011). It does not make sense to argue that digital media cause civil society leaders or dictators to be more effective at their work. Technology tools and the social actors who use them, together, make or suppress political uprising.

Conclusion: Information Infrastructure and Civil Society

Digital media have changed the tactics for democratization movements and new information and communication technologies played a major role in the Arab Spring. We do not know how the new states in North Africa and the Middle East will stabilize and whether change will come to the remaining, more recalcitrant authoritarian governments. But the consistent narrative arc of the uprisings in the Arab Spring involved digital media intimately. The countries that have experienced the most dramatic political protests are among the most wired in the region and have large, tech-savvy, civil society groups. The countries with the most tech-savvy civil society groups, such as Tunisia and Egypt, removed their dictators with few casualties, while the countries with the weakest technology infrastructure, such as Libya, Syria, and Yemen, were locked in protracted civil wars. As Salamey and Pearson argue, advancements in communications technology and economic globalization have undermined long-standing national authoritarianism in favor of Middle Eastern civil rights and civil society movements (Salamey and Pearson 2012).

In times of political crisis, technology firms sometimes act constructively to either serve the public or capture market share. For example, Google rushed its launch of Speak2Tweet, an application that bypassed Mubarak's attempt to block Twitter use by translating phone messages into text messages. Several tech firms built dedicated portals to allow in-country users to share content. But as Morozov points out, information technologies—and the businesses designing them—do not always support democratization movements (Morozov 2011). Opposition leaders in countries where political parties are illegal sometimes use pseudonyms to avoid government harassment. But doing so on Facebook is a violation of the company's user agreement, and so the company actually shut down some of the protest-group pages. Supporters eventually were successful in having the pages reinstated, but these incidents demonstrated that businesses such as Facebook, YouTube, and Twitter failed to fully appreciate how their users were treating these tools—as public information infrastructure and not just as cool new business applications. Alternately, Google has signed the Global Network Initiative—a compact for preventing web censorship by authoritarian governments; Facebook's commitment is less resolute and maintains only an observer status. It might be

technically possible to require Facebook users in Western countries to use real identities but then to also offer levels of anonymity to people living in dictatorships, but no such features or coordinated frameworks exist.

It is difficult to say whether the revolutions would or would not have happened without digital media. We know the region has long had democratic activists—they just have not had many successful protests until now. Radio and television reaches most people, while only 10–20 percent of the population of most countries in the region has easy access to the internet. Yet this subset of people is an important one: it is usually a cluster of government workers, educated professionals, young entrepreneurs, and urban dwellers. These are the networks of people who initiated, coordinated, and sustained civil disobedience. We also know that the countries with the lowest levels of technology proliferation are among those with the weakest democratization movements. Counterfactual scenarios can be intellectually interesting, but the overwhelming evidence about what did happen in a concrete set of cases should probably not be evaluated equally with hypothetical cases and imagined alternative scenarios. Counterfactuals and thought experiments can be fun to work with, but prominence should always be given to the evidence and the patterns in political change for which there are real cases.

It may seem premature to think of this as a wave of democratization, since several states are still in crisis. Democratization waves are measured in years, not months. But like other periods of democratic emergence, the Arab Spring had a unique narrative arc, has involved a particular community of nations, and has caught most autocrats and analysts by surprise. Digital media are important precisely because they had a role in a relatively successful popular mobilization against authoritarian rule. Subsequently, civil society leaders in other countries used digital media in similar ways.

Unlike previous waves of democratization, however, the Arab Spring had several unique features. For the amount of political change that has occurred, there has been limited loss of life. In Algeria, Egypt, Jordan, Morocco, and Tunisia, civil society leaders found that state security services were noticeably more reluctant to move in on protesters precisely because most of the protesters had mobile phone cameras. In Bahrain, Libya, Saudi Arabia, Syria, and Yemen, security services did move on peaceful protests, but good documentation of police abuse made its way to the international community.

For scholars of social movements, collective action, and revolution, there are several things about this latest wave of protests that should challenge our theories of how such protests work. These movements had an unusually

distributed leadership. The first days of protest in each country were organized by a core group of literate, middle-class youth who had no particular affinities to nationalism, party, class struggle, or religious fundamentalism. Along with being ideologically mainstream, the core group of organizers did not start their mobilization with something we would recognize as broadcast media. Radio, television, and newspapers have long been part of the narrative of other democratization waves. But here the storyline involves the production and consumption of content over social networks, not the broadcast of ideological frames from a few demagogues to a less-educated public.

Looking over the events of the first months of 2011, we can say more than simply that the internet has changed the way political actors communicate with each other. Since the beginning of the year, social protests in the Arab world have cascaded across North Africa and the Middle East, largely because digital media allowed communities to realize shared grievances and nurture transportable strategies for mobilizing against dictators. In each country, people used digital media to build a political response to a local experience with injustice. They were not inspired by Facebook but by the real tragedies documented on Facebook. Social media have become the scaffolding upon which a functioning civil society can grow, and new information technologies afford activists freedoms they did not have before: information networks not easily controlled by the state and coordination tools that are already embedded in trusted networks of family and friends.

One of the most important reasons for seriously considering the role of information technology during the Arab Spring is that activists and civic leaders themselves say it had a significant impact on their organizational effectiveness. Information infrastructure, according to the stories from across the region, was put to work in the service of political protest. Indeed, the intriguing examples of innovation from the street not only demonstrate how activists did things with technologies that neither engineers nor censors could have predicted. There is also evidence that the organization of protest, the demographic of protesters, and the strategic maneuvers of civic leaders has changed in the digital age.

2

The Recent History of Digital Media and Dissent

Information infrastructure provides new structures for collective action. Since the commercialization of digital media, information infrastructure has become a formative space for nurturing and organizing social action. Such spaces are especially important for the public sphere in non-democratic societies because they can be the *only* public spaces where autonomous—or even anonymous—discussion can take place. Today, in many authoritarian regimes, public opinion forms online. Yet it is a mistake to think that digital media are important simply because they are a new system for quickly delivering content. The longer history of digital media and dissent in the region reveals that the internet, mobile phones, and social media applications are not just content systems; they are referral systems, rating and ranking systems, archiving systems, standard setting systems, deliberative systems, consultative systems, and systems for socialization. In varied ways the many technologies we think of as digital media are sometimes venues for public participation and sometimes means of social control. We identify three periods in which information infrastructure has come to provide new structures for collective action.

For Western media, the role of information technologies in the Arab Spring protests became a common news peg. But such technologies did not arrive suddenly the year before, and the perception that a popular uprising might be successful did not form suddenly. So if we investigate the role of digital media in social change, do we miss the other important, contextual features of each country's domestic politics and international alliances? It would be epistemologically weak to study digital media and expect that our understanding of this factor yields a complete understanding of the whole experience. However, there are things we miss if we do not study the media seriously, and there are

reflexive ways of situating media use in larger historical contexts. In other words, digital media provide a useful entry point for understanding how contemporary political communication worked in the regimes that collapsed, and how they worked in the regimes that survived. The system of political communication within the region did change radically with technology diffusion, but this recent history is one of evolution, not revolution.

The internet was privatized in 1995. In the following five years, the internet provided online discussion spaces for political conversations that were not happening offline. Between 2000 and 2006, the political internet expanded with online and alternative news media, which provided what Habermas might recognize as the shared text of a digital public sphere. Since 2007, social media have added the additional dimension of allowing individuals to manage their own social networks, and to push and filter political information along these links to family and friends. Prior to the Arab Spring, past cascades did not have the benefit of commercialized communication networks and technologies, such as social media and mobile telephony, to draw in the wisdom of the crowd and smart mob mobilization. In contrast, the Arab Spring is one of the most impressive examples where laterally organized collective action projects were in combat with vertically organized state bureaucracies.

Social Movements and Digital Media before the Arab Spring

Prior to the Arab Spring, some countries in the region had vibrant online civil societies where open political conversations took place beyond the control of government censors. In some countries, government censorship was very effective at preventing open political conversations and discouraging the use of digital tools for organizing civil society groups independent of the state. By the end of 2010, the first group of countries was experiencing a significant digital renaissance in how civil society leaders did their work. Protest movements that had organized offline years earlier were starting to organize online, score political victories, and have an influence on public policy. These are also the countries where the contagious digital content of political protest spread most rapidly and where several dictators ultimately lost power. In contrast, by the end of 2010 the second group of countries were experiencing no such renaissance, and while there are a few successful examples of civil society leaders using digital media for political protest, most of the authoritarian governments

in these countries were having to spend more and more resources on digital censorship and surveillance to keep ahead of democracy activists.

Digital Media and the Civic Revival, 1995–2010

Even before their revolutions, Tunisia and Egypt had active blogospheres. Often the most critical coverage of government abuse was done not by newspaper reporters, but by average citizens using their access to the internet in creative ways. Most famous in Tunisia was the graphically simple video of the president's plane arriving and leaving Europe's elite shopping destinations with his wife as the only passenger, mentioned earlier. Since the online publication of that video in August 2007, the regime has variously cracked down on YouTube, Facebook, and other online applications. In Bahrain, it was Bahrain-Online.com that attacked the country's prime minister for corruption, but by 2010 every country in the region had an online source for credible information about corruption and regime abuse, spaces for political conversation independent of state control, and social network feeds that distributed news and alternative policy proposals the major news organizations would not carry. Some countries had many such online sources. At first, such content was hosted on purpose-built websites, often with named URLs like BahrainOnline.com. But after 2005, a growing amount of critical content was hosted through social media services; YouTube, DailyMotion, Facebook, and Twitter became portals through which politicized content could be shared. When a regime could not take the criticism, it had to act by blocking access to entire services. For Libyans and Syrians, this content was mostly hosted out of country, though the origin of contributors included both in-country citizens and members of widespread diasporas.

In Egypt, democracy advocates benefited from Cairo's position not only as a cultural hub but also as a media center with a reasonably robust information infrastructure. The diversity in Egypt's media content had long been unusual in the region, and some have argued that because of this the role of digital media in Egypt's uprising may also be unique and not easily compared to other country experiences during the Arab Spring (Khamis 2011). It has enabled the city's politically disaffected but still active youth and others to build a vibrant public sphere online. Over the past several years, political parties and social movements have become particularly adept at using social media to their advantage. The Muslim Brotherhood, for example, used the

internet to share information, organize supporters, and conduct other activities that helped it challenge secular authorities. Digital networks are ultimately social networks, so it should not be surprising that the most viral political content actually took the form of music with lyrics that directly targeted political leaders (DeLong-Bas ca. 2011).

In response, the governments of Tunisia and Egypt arrested bloggers, tracked online conversations, and shuttered websites and internet access. In 2005, Egyptian blogger Abdolkarim Nabil Seliman was arrested and imprisoned for four years after criticizing President Hosni Mubarak and the state's religious institutions. In 2007, a number of bloggers were arrested for organizing and covering social protests when the Egyptian parliament approved controversial constitutional amendments. Many activist Egyptian bloggers, some affiliated with groups such as Kefaya and the April 6 Movement, were arrested and faced physical abuse. Egyptian bloggers proved particularly resilient in continuing to publish critical information online, and indeed digital media had for several years provided an opinion platform that neither the state nor traditional political parties could dominate (Dunn 2010; Lim 2012). But in both Tunisia and Egypt a cottage industry of bloggers and activists used the internet to evade government censorship by creating alternative newscasts and building spaces online where individuals could publish information critical of the government without attaching their names to it. Online activists and bloggers, digital news organizations, and political party websites form a virtual ecology of civil society groups that debate contentious issues. In many cases, the boundaries between these organizations are blurred for important reasons. For example, banned political parties, such as Egypt's Muslim Brotherhood, had relied on bloggers who maintained servers located outside the country and thereby could not be taken offline by the government.

Egypt has a number of active political parties, many of which maintain websites and online newsletters to communicate with supporters and constituents, but also with each other. Almost all major parties publish online newspapers, such as the New Wafd Party's *Al Wafd Daily*, the National Progressive Unionist Party's *Al-Ahali* newspaper, the Arab Democratic Nasserist Party's *Al-Arabi* weekly, and the Tomorrow Party's *Al Ghad* weekly. In addition to the discussion spaces fostered by newspapers, party publications like these provide opportunities for cross-party political negotiation. The Muslim Brotherhood had been banned by the government but nonetheless used Arabic and English language publications to maintain a presence in online Egyptian politics equal to—if not more prominent than—that of many politically sanctioned parties.

Before the Arab Spring, Twitter had a loyal following of users in Tunisia and Egypt living mostly in the largest cities. While records of Twitter conversations in both countries prior to the revolutions are not available, in most parts of the world we know that Twitter is used by networks of family and friends to trade jokes and talk about everyday life. Facebook became a political tool because people found it useful for amassing content and building links to like-minded individuals. The Tunisian government was more active than the Egyptian regime in restricting social media. In 2007, for example, it blocked YouTube and DailyMotion for an extended period and in 2008 blocked Facebook for a month. In both cases, observers suspected that the regime was reacting to fears that social media were strengthening the bonds of communication between citizens in ways not easily monitored and managed by the state.

In the hands of average people, digital media became a means of documenting corruption and regime abuses. But it was also a tool for sharing the observations of outsiders. WikiLeaks revealed that the US ambassador to Tunisia had reported that more than half of Tunisia's commercial elites were personally related to President Ben Ali (Anderson 2011). This network was known in the country's diplomatic circles as "the Family," and the ambassador's leaked commentary circulated quickly among regime critiques and embarrassed elites. Yet it was not simply that the networks were exposed online. Information technologies opened the door to new ways of thinking about how to investigate, organize, assemble, and conduct political activities that could be immediately conveyed at a global level (DeLong-Bas ca. 2011).

Digital Media and Civic Repression, 1995–2010

Heightened levels of political conversation have had several specific consequences for key regimes. The topics of political conversation are rarely unique to digital media, though discussion of electronic surveillance abound on email forums, blogs, and social media feeds. More important, there is a set of political issues that seem to arise consistently across the varied political cultures in which civil society has begun to discuss public policy online. The first topic to arise is often the balance of power and wealth between ruling elites and the rest of the country, or between primary cities, secondary cities, and the countryside, or among ethnic minorities. These conversations are about the relative wealth and impoverishment of some communities and neighborhoods over

others. Discussing and documenting wealth disparities is an especially political act when the ruling elites are from minority communities, or when the social network of family and business interests that controls wealth is unused to having its finances tracked. In Egypt, Tunisia, and Syria, the online conversation about who controlled what quickly fed the collective sense of disparity.

Second, complaints about corruption grew louder and more fully substantiated. Through digital media, accusations about graft or abuse became documented in video, audio, and text, and these digital narratives were distributed over networks of family and friends. In some countries, accusations of official corruption may have occasionally appeared in the newspaper but only when the accusations were fully substantiated, regime censors had approved the coverage, or the target was modest. But digital media allowed the accusations of human rights abuses, misspent funds, and political favoritism to be more consistently and systematically documented. Such material became the shared text of grievances for regime critics.

Third, both the growing conversation about wealth disparities and corruption helped erode the long-held taboo against criticizing leaders directly. In Tunisia and Egypt, direct criticism of Ben Ali and Mubarak led to arrest and physical intimidation. In Morocco and Jordan, direct criticism of King Mohammed VI or King Abdullah was an invitation to the state's security apparatus to take action against the criticizer, and also a violation of a deep-seated cultural norm that royal figures were the embodiment of the state and beyond reproach. By 2010, it was increasingly possible to identify, in online news coverage and political blogs, a Royal's responsibility, negligence, or behavior relative to policy gaffes.

Comparing Media Systems

Table 2.1 identifies important points of comparison and divergence in how digital media have diffused in the countries of North Africa and the Middle East. As Converse once said of public opinion research, "a sample design which extracts unrelated individuals from the whole and assigns the opinion of each an equal weight is a travesty on any 'realistic' understanding of what the concept of public opinion means" (Converse 1987). Today, any realistic understanding of public opinion formation in Muslim media systems must come from a critical awareness of the limits to survey data but also an appreciation that digital-information technologies are providing

new opportunity structures for inclusion in the process of public opinion formation and measurement.

Many scholars have argued that news media are crucial for raising a sense of collective identity (Anderson 1983). And for a long time, social movement theory supposed that revolutions occurred when both the structural opportunities and perceived opportunities for success were necessarily in place. A regime had to be demonstrably fragile and the revolutionaries had to believe they had a chance of achieving their goals. Kurzman argued that the Iranian revolution of 1979 may have been the evidence that perceived opportunities can be a sufficient cause of popular uprising (Kurzman 1996). Different kinds of information technology have long supported discourse and activism in the Muslim communities of the developing world and have often played a role in the political development of secular Islamic states. President Jamal 'Abd al-Nasir skillfully used the radio to strengthen his popular base in Egypt, with emotional appeals that fueled nationalist pride in the 1960s. Iranian revolutionaries used cassette tapes to spread their political messages among networks of students, as have radical Saudi Islamists and Yemeni poets (Fandy 1999; Miller 2007; Sardar 1993; Sreberny-Mohammadi and Mohammadi 1994). Most of the Arab regimes in North Africa and the Middle East had seemed stable and democracy resistant for 40 years (Diamond 2009). The perception that a popular uprising might result in an Arab Spring formed online, but it did not form suddenly.

In the years leading up to the Arab Spring, the diffusion of digital media, in the form of mobile phones, personal computers, and software applications, had a significant impact on the systems of political communication in the countries where civil society was allowed to use such tools and in the countries where governments set the terms of technology access. Egypt's Kefaya Movement started online, but it started in 2004. That the movement began several years prior to the Arab Spring does not undermine the premise that it scored multiple political victories using its online strategies, or that it successfully organized the inciting incidents in Tahrir Square. Digital media did not have, in this way, a "sudden" impact on Egyptian politics. In several countries in the region, it took several years for people with political affinities to find themselves—and each other—online.

In almost every country in the region, mobile phone cameras became small, personal weapons against authoritarian rule. They were not always used as such and the consequences for recording and distributing even fuzzy footage of abusive security services were often severe. Often those who

Table 2.1 The Comparative Context of Digital Media in North Africa and the Middle East

	Algeria	Bahrain	Djibouti	Egypt	Iran	Jordan	Kuwait	Lebanon	Libya	Mauritania
<i>Demographics</i>										
Population ^a	35	0.66	0.85	80	75	6.4	2.6	2.5	6.3	3.3
Percent Muslim ^a	98	81	97	95	100	99	86	60	97	99
Literacy, ^b										
GDP Per Capita ^b	\$6,950	\$35,006	\$2,309	\$6,000	\$10,600	\$5,663	\$37,849	\$15,193	\$16,425	\$2,093
<i>Political Communication</i>										
Internet Users, 2000 ^c	0	6	0	1	0	3	8	8	0	0
Internet Users, 2010 ^c	13	54	8	15	47	27	42	29	5	2
Mobile Phone Subscriptions, Percent of Inhabitants 2010 ^c	92	124	19	87	91	107	161	68	172	79
Do You Occasionally Use the internet, Percent of Total Population? ^d	..	..	..	23 (2010)	..	32 (2010)	71 (2007)	44 (2010)	..	..
<i>Censorship^e</i>										
Political	N	P	—	N	P	S	S	N	S	—
Social	N	P	—	N	P	N	P	N	N	—
Conflict/Security	N	S	—	N	E	N	S	N	N	—
Internet Tools	N	E	—	N	P	N	P	N	N	—

Note: In Saudi Arabia, there are multiple mobile phones per person. For Surveillance, N = None, S = Selective, P = Pervasive, E = Extensive.

Sources: (a) population, percentage Muslim, and gross domestic product per capita, purchasing power parity in USD in 2009: World Bank, World Development Indicators; (b) percentage of population over 15 who can read and write: CIA World Factbook; (c) internet users as a percentage of total population in 2000: International Telecommunications Union; (d) Pew Global Attitudes Project; (e) OpenNet Initiative.

<i>Morocco</i>	<i>Oman</i>	<i>Palestinian Territories</i>	<i>Qatar</i>	<i>Saudi Arabia</i>	<i>Somalia</i>	<i>Sudan</i>	<i>Syria</i>	<i>Tunisia</i>	<i>UAE</i>	<i>Yemen</i>
32	2.5	4.3	1.2	25	9.2	31	21	10.3	3.6	24
100	88	98	78	97	99	71	93	100	76	99
\$4,754	\$25,301	—	\$88,559	\$20,400	\$600	\$2,300	\$5,208	\$8,536	\$48,821	\$2,598
0	4	1	5	1	0	0	0	1	24	0
41	48	54	67	27	1	9	20	34	69	10
100	166	—	132	188	7	41	58	106	145	46
22 (2007)	..	48 (2007)	..	..	..	..	..	..	..	..
N	S	—	S	E	—	S	P	P	E	E
S	P	—	P	P	—	E	S	P	P	P
S	N	—	S	S	—	N	S	S	S	S
S	E	—	P	P	—	E	P	P	P	P

recorded and distributed mobile phone footage of abusive governments were punished more than the perpetrators of abuse. But even in the toughest authoritarian regimes, there are important examples of how mobile phone cameras were used to document the abuse of power and expose injustice to a broader network. By 2010, most governments in the region had experienced a political controversy of some kind because video evidence they could not control was being accessed online. Second, Al Jazeera became a functionally independent, transnational news medium that generated content even in countries where it was unwelcome. Again, governments did not always respond to the accusations, criticisms, and embarrassing coverage broadcast by Al Jazeera's cable and website feeds. But Al Jazeera clearly rose as a political actor in the region, transforming political discourse by normalizing forms of journalistic content and intellectual critique where challenges to political authority were not only tolerated but encouraged (Lynch 2006). Its markets were not always large, but they were tolerated by some governments.

Conclusion: Digital Networks as Social Networks

Ruling elites often try to co-opt civil society groups, and in times of political or military crises they can attempt to control the national information infrastructure. But a defining feature of civil society is independence from the authority of the state, even in countries such as Saudi Arabia and Egypt. And in important ways, digital communication networks are also independent of any particular state authority. What has been the impact of digital media on political communication in Arab media systems? How have tools such as mobile phones and the internet affected the process of forming political identity, particularly for the young? When do such tools change the opportunity for civic action, and when do they simply empower ruling elites to be more effective censors?

All in all, information technologies have become a tool for gradually eroding centralized state power. In some countries ruling elites tolerated this erosion, thinking that it would not ultimately threaten their control. In other countries, ruling elites resisted the use of consumer communication electronics through regulation and censorship. But as systems of communication grew, the years leading up to the Arab Spring were notable for a rising number of protests, fomented and organized online but also involving street action. Youth leaders seemed surprised at the speed and size of the civic action they

could organize on short notice, and they found themselves drawing international attention and sometimes even scoring small political victories. By 2010, the enemies of the strongmen of Tunisia, Egypt, and Yemen no longer seemed like a fragmented bunch.

In this book, we analyze the best available micro-level data on technology use and changing patterns of political identity and macro-level data on networks of civil society actors. Even though these regimes are very different, we offer four propositions about what has changed since the introduction of new digital communication technologies. First, we argue that citizens in all four countries have been able to greatly increase the level of international news content they can access. Second, a growing portion of the public uses social networking applications in their communications, independent of direct state control. Third, civil society actors have flourished online, even when the state has cracked down domestically. Finally, women and minority movements have been drawn into political discourse online in ways not often available in offline spaces. It is within this context that new forms of social movement organization emerged. In the next chapter we discuss how the diffusion of digital media allowed key civic leaders to develop agile, responsive organizations that were eventually able to outmaneuver authoritarian governments.

3

Information Infrastructure and the Organization of Protest

One of the most important but rarely explored dimensions of digital media and social change is the innovation of new technologies, new applications, and new organizational forms in the lead-up to social protest. Successful activists are exceptionally creative and catch dictators off guard. This chapter provides rich examples of tools and tool kits that civil society leaders now build—sometimes on their own, sometimes with the help of Western digerati and aid agencies—to help organize against political elites. Some of the important innovations are cultural: soundtracks to the revolution produced by digital hip-hop artists from Libya and Algeria inspired young citizens and earned artists jail time. Some of this also involves major states or radical fundamentalists, who redesign technology in ways not expected by engineers to maintain ideological hegemony or promote group propaganda.

No one could have predicted that Mohammed Bouazizi would play a role in unleashing a freedom wave in the Arab world. Yet after the young vegetable merchant stepped in front of a municipal building in Tunisia and set himself on fire in protest of the government in December 2010, democratic fervor spread across North Africa and the Middle East. Governments in Tunisia and Egypt soon fell, civil war broke out in Libya, and protestors took to the streets in Algeria, Morocco, Sudan, Syria, and elsewhere. The Arab Spring had many sources. One of these was social media, which had the power to put a human face on political oppression. Bouazizi's self-immolation was one of several stories told and retold on Facebook, Twitter, and YouTube in ways that inspired dissidents to organize protests, criticize their governments, and spread ideas about democracy. Indeed, Facebook became the information infrastructure that supported political organizing independent not only of the state, but independent of other political parties (Dunn 2010).

Tunisia and Egypt's Tech-Savvy Popular Democracy Movement

One reason that technology has been an effective tool for democracy advocates in Tunisia and Egypt is that both countries have relatively young, tech-savvy populations. In Tunisia, where the median age is 30, approximately 23 percent of the 10 million people who live there are under the age of 14. In Egypt, where the median age is 24, 33 percent of the country's 83 million inhabitants are under 14. Cell phone use is widespread in both countries, with 93 mobile phone subscribers for every 100 people in Tunisia and 67 mobile phones for every 100 people in Egypt. What's more, in both countries the government has censored the media, giving individuals a strong incentive to turn to the internet for credible sources of information.

Internet use in both countries is also significant. About 25 percent of the population in Tunisia and 10 percent of the population in Egypt has used the internet at least once, with much of the use concentrated among young people. Some 66 percent of the internet-savvy population in Tunisia, and 70 percent in Egypt, is under the age of 34. All of this might explain why many of the people who went into the streets in early 2011 to demonstrate were young, technologically inclined individuals who blogged, Tweeted, or posted to Facebook news events as they unfolded.¹

In addition to enabling young people to organize, technology has facilitated the growing participation of women in political conversations. Forty-one percent of Tunisia's Facebook population is female; the number is 36 percent for Egypt. More than 30 percent of the Egyptian citizens who took part in street protests were women (Gallup 2012). Women also participated actively in political conversations over Twitter, and they were notably present in street gatherings in both Tunisia and Egypt. Indeed, through social media, women like Esraa Abdel Fattah of the Egyptian Democratic Academy became vocal opponents and thoughtful leaders. Leil-Zahra Mortada's Facebook album of women's involvement in the revolution became a popular site in Egypt.

Our unique dataset of Twitter conversations in Tunisia and Egypt reveals that women were quite active during the uprisings. By distinguishing between people tweeting in-country from those using the same hashtags (key words) but tweeting outside the country, we were able to determine that 30 percent of the people actively contributing to Twitter conversations inside Tunisia were women. Women made up 33 percent of those actively tweeting inside Egypt during the revolution.

Tunisia—From Oppression to Resistance to Spark for the Region

By early January, protestors' appeals for help and clumsily recorded mobile phone videos were streaming across North Africa, and protests in Algeria and other countries started to crop up. By the time Ben Ali fled Tunisia on January 14, active campaigns for civil disobedience against authoritarian rule were growing in Jordan, Oman, and Yemen. In other countries such as Lebanon, Mauritania, Saudi Arabia, and Sudan, minor protests erupted on a range of issues and triggered quick concessions or had little impact. But even in these countries, opposition leaders appeared to draw inspiration from what they were tracking in Tunisia. Moreover, opposition leaders across the region were learning the digital tricks for how to catch ruling elites off guard. Soon, events in Tunisia would help inspire the largest protests in Cairo in 30 years.

Social media brought a cascade of messages about freedom and democracy across North Africa and the Middle East and helped to raise public expectations for the success of political uprising. Two kinds of evidence reveal much about this cascade: the rhythm of Tweets about political change and the topical evolution of blog posts. The rhythm of tweets is significant because it gives us a window into conversations that took place over the broad digital spectrum. The vast majority of conversations likely involved using cell phones to send text and other types of messages, but there isn't a good database for studying that information. There is, however, a robust set of data for conversations that take place over Twitter, so in a sense Twitter can serve as a proxy for understanding the types of conversations that happened on other forms of digital communication.

And what we can see on Twitter is that a large volume of people—both inside each country and across the globe—were following events as they unfolded. Twitter seems to have been a key tool in the region for raising expectations of success and coordinating strategy. Twitter also seems to have been the key medium for spreading immediate news about big political changes from country to country in the region. As a group, Twitter users are probably more educated and wealthier than the average person and more likely to be found in major cities. They are also, consequently, opinion leaders for whom Twitter served as an important means of carrying on extended conversations about the prospects for liberty and the logistics of social action.

In total, there were 13,262 Tweets using the hashtag most prominently associated with Tunisia's political uprising: #sidibouid. On average, throughout

the study period of January 14 to March 16, 18 percent of tweets about the Tunisian uprising came from inside Tunisia, 8 percent from neighboring countries, and 32 percent from outside the region. The remainder offered no location information. The day Ben Ali resigned, 2,200 tweets from Algeria, Bahrain, Egypt, Morocco, and Yemen concerned the uprising in Tunisia. Many tweets involved personal stories of suffering at the hands of a tough and incompetent regime. Some involved links to critical documentaries on YouTube or made reference to Facebook groups and news stories that did not paint the regime in a flattering light.

With the earliest available records of Twitter feeds, there are clear waves of political consciousness that connect key events, political sentiment, and protestor turnout.² In the case of Tunisia, the number of contributions increased steadily between late January and late February. The number of people with no location information also declined, suggesting that as time passed, Tunisians grew more willing to note publicly that they were tweeting from inside Tunisia during the heady days of political change. The flow of content is marked by moments when the service was either overloaded or mobile networks were under attack (or both). Before Ben Ali resigned, more than a thousand people were tweeting each day about political change in Tunisia. Immediately after his resignation, Twitter service declined precipitously, with activists in the country reporting that security forces were interfering with communication networks. When the service returned to normal, Twitter traffic peaked again, with a thousand people in Tunisia tweeting daily and street protests drawing out tens of thousands. This lasted for several weeks, until the last vestiges of the ruling elite were removed from power.

Just as Twitter traffic peaked with street protests, the topics discussed in the Tunisian blogosphere closely tracked with public interest in political freedom. Figure 3.1 tracks four of the most important keywords in the Tunisian blogosphere, in which content is mostly written in French. Analysis of the structure of content and links in the Tunisian blogosphere between November 2010 and May 2011 indicates direct parallels between online political conversations and offline events. Particularly after December 17, 2010, when Bouazizi set himself on fire, the Tunisian blogosphere experienced a spike in the frequency of online conversations about revolution and President Ben Ali's leadership. In this way, the volume of digital conversations peaks with the size of street demonstrations, and the content of these conversations directly reflects public sentiments. Figure 3.1 reveals the rise and fall of certain keywords in the Tunisian blogosphere, beginning two months before the popular uprising.³

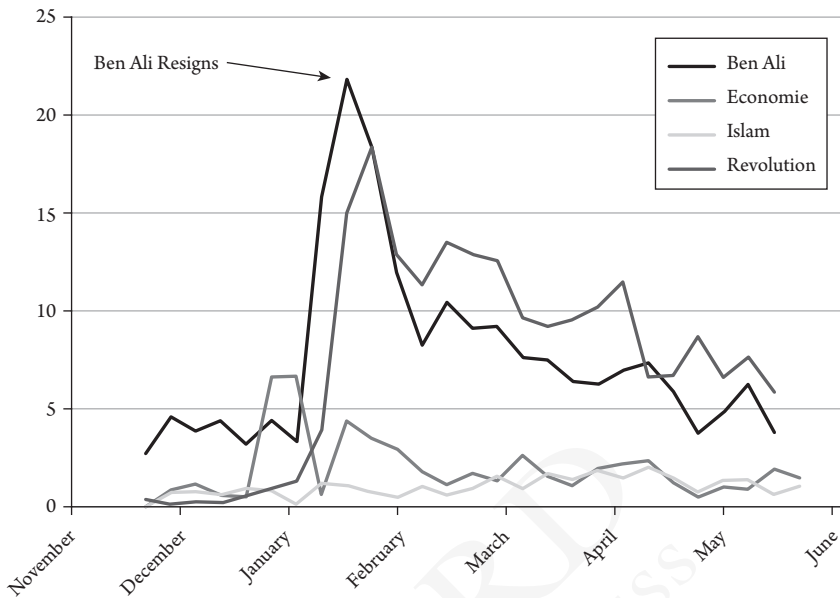


Figure 3.1 Percentage of Tunisian Blogs with Posts on Politics, by Keyword.

Note: Figure represents the percentage of all blog posts containing at least one of six keywords. Based on data captured through eCairn beginning November 20, 2010.

Tunisian bloggers had, for several years, been among the most critical opponents of Ben Ali's regime. By scanning the structure of content and links of the Tunisian blogosphere, we can chart the progress of the idea of political reform. Many Tunisian bloggers wrote in French and Arabic. Moreover, distinct keywords and themes regarding economic grievances and democratization arose preceding the popular uprising. Among Tunisia's digerati, economic woes and Ben Ali's leadership are key topics from November to December. But with Bouazizi's death in early January came a spike in conversation about his plight and shortly thereafter a growth in the number of conversations about freedom and revolution. Islam, as a political theme, tracks on only a few blogs and the interest in economic issues diminishes over time relative to themes of freedom and revolution.

Talk about revolution continued even after Ben Ali fled the country because his replacement, Mohamed Ghannouchi, was viewed by many as part of the old regime. Consequently, the percentage of blog posts with the keywords "revolution" and "liberty" peaked after Ben Ali had already left office. By the third week of January, 18 percent of all Tunisian blog posts talked about revolution; 10 percent discussed liberty. That week marked the climax of protester

turnout with estimates ranging from 40,000 to 100,000 people in the streets. The primary topic of political conversation in Tunisian blogs then became “revolution” until a public rally of at least 100,000 people on February 27, after which Ghannouchi was forced to resign. In Tunisia, the blogosphere anticipated what happened on the ground by days. Demand online for liberty eventually manifested itself in the streets.

The relative prominence of conversations about freedom among Tunisia’s wired middle class is consistent with anecdotal evidence of public sentiment during the first few days of the uprising. Journalists and country experts consistently expressed surprise that traditional political ideologies and political parties were absent from the protests. Major opposition parties and political leaders did not feature as prominently as Bouazizi, and were not particularly associated with conversations about liberty or the prospects of revolution. And conversations about liberty and freedom were more important than conversations about Islam.

Protest Narratives Cascade across the Region

Around the region, people increasingly tweeted about events occurring in their neighborhoods. Stories of success and difficulty spread widely and created a kind of freedom meme. The same meme traveled across the region through Facebook and YouTube, as inspiring images were captured by mobile phone and transmitted. Interestingly, their social media conversations about revolution underwent a linguistic change in keeping with the rising feelings of national and Arabic pride. Prior to the groundswell of support for political change, most of the content about protest coming over social media from users in the region was in English and French. After the inciting incidents in Tunisia and Egypt, most of the content flowed resolutely in Arabic (Mourtada and Salem 2011). In addition, Lotan et al.’s analysis of Twitter contributions (Lotan et al. 2011) reveals a typology of users based on the frequency and form of communication:

- Mainstream media organizations: news and media organizations that have both digital and non-digital outlets (e.g., @AJEnglish, @nytimes).
- Mainstream news media organizations: blogs, news portals, or journalistic entities that exist solely online (e.g., @HuffingtonPost).
- Non-media organizations: groups, companies, or organizations that are not primarily news-oriented (e.g., @Vodafone, @Wikileaks).

- Mainstream media employees: individuals employed by MSM organizations, or who regularly work as freelancers for MSM organizations (e.g., @AndersonCooper).
- Bloggers: individuals who post regularly to an established blog, and who appear to identify as a blogger on Twitter (e.g., @gr33ndata).
- Activists: individuals who self-identify as an activist, who work at an activist organization, or who appear to be tweeting purely about activist topics to capture the attention of others (e.g., @Ghonim).
- Digerati: individuals who have worldwide influence in social media circles and are, thus, widely followed on Twitter (e.g., @TimOReilly).
- Political actors: individuals who are known primarily for their relationship to government (e.g., @Diego_Arria, @JeanMarcAyrault).
- Celebrities: individuals who are famous for reasons unrelated to technology, politics, or activism (e.g., @Alyssa_Milano).
- Researchers: an individual who is affiliated with a university or think tank and whose expertise is focused on Middle East issues (e.g., @abuardvark).
- Bots: accounts that appears to be an automated service tweeting consistent content, usually in extraordinary volumes (e.g., @toptweets).

The content that was flowing over Twitter, for many users in the countries affected by protests, was also of a peculiar kind. Papacharissi and Oliveira call it “affective news” because so much of the content included links to stories tagged by personal content, or personal photos and narrative about events on the ground (Papacharissi and Oliveira 2012).

Here we specifically study tweets, rather than simply Twitter users, because they represent a sense of conversation and active dialogue about freedom that transcended national boundaries. For example, after Egyptians heard that Ben Ali had fled Tunisia on January 14, Twitter user and journalist Gigi Ibrahim declared that “the Tunisian revolution is being twitterized . . . history is being written by the people #sidibouzir #Tunisia.” Blogger Tarek Shalaby echoed with, “we will follow it!” On January 25, journalist Hossam el-Hamalawy noted that “tens of thousands r protesting [with] the same chants as the Tunisians.” In the aftermath of an unexpectedly large turnout in Egypt that day, Mahmoud Salem—the blogger and activist also known as “Sandmonkey”—urged his Twitter followers to “please remember, it took a month of protests 4 Tunis revolution 2 succeed. Persistence is everything.”

Figure 3.2 demonstrates the rising wave of tweets about events in other countries and the prospects of making democratic gains. To produce this

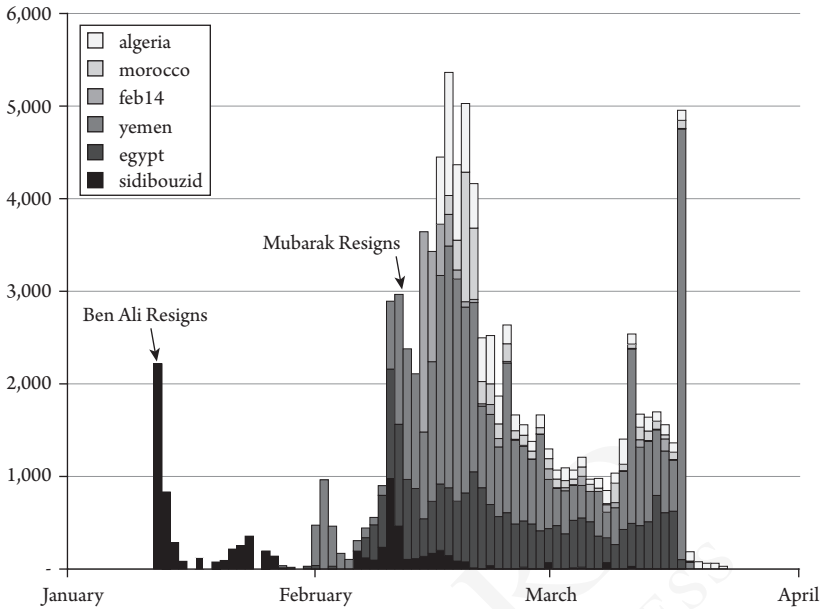


Figure 3.2 Number of Tweets in the Region Using Hashtags for Neighboring Countries.

Note: These are the hashtags that came to be associated most prominently with political uprisings in Algeria, Egypt, Bahrain, Tunisia, Morocco, and Yemen. The hashtags analyzed, in order, were “#algeria,” “#egypt,” “#feb14,” “#morocco,” “#sidibouid,” and “#yemen.”

graphic, we first selected all the tweets we could confirm as originating in Algeria, Bahrain, Egypt, Morocco, Tunisia or Yemen using geo-data. We then isolated the tweets using hashtags for countries and freedom movements other than country of origin. In other words, this figure specifically displays the rate at which people in each country caught and transmitted the meme of political freedom from other countries. In the two weeks after Mubarak’s resignation, there was an average of 3,400 tweets a day about the political crisis in Egypt by people living in neighboring countries.

Figure 3.2 reveals that at the peak of events in Tunisia, there were 2,200 tweets about Ben Ali’s resignation from outside Tunisia (but within the region). In the subsequent months, the hashtags associated with conversations about political change in particular countries were often used by people in neighboring countries. In other words, people in countries throughout the region were drawn into an extended conversation about social uprising. As street protests arose in Tunisia and Egypt, then Yemen and Bahrain, and eventually Algeria and Morocco, people across the region tweeted in real time about big events. This is significant because it reveals how the success of demands for political

change in Tunisia and Egypt led individuals in other countries to pick up the conversation and talk about how it was relevant to their own lives. In other words, it helped cascade conversation about freedom across the region.

Egypt—The Freedom Meme Spreads through Social Networks

News of Ben Ali's departure spread rapidly in Egypt, where almost everyone has access to a mobile phone and the internet-using population is the largest in the Arab world. State-run media in Egypt, which had been slow to report protests in the region and in Cairo, reluctantly covered Ben Ali's exit. The first occupants of Cairo's Tahrir Square shared many of the hopes and aspirations of their counterparts in Tunis. They were a community of like-minded individuals, underemployed, educated, eager for change but not committed to religious fervor or a specific political ideology. They found solidarity through social media, and then used their mobile phones to call their social networks into the street. In a surprise to both government analysts and outsiders, a large network of relatively liberal, middle class, peaceful citizens quickly mobilized against Mubarak. The traditional Islamists, opposition parties, and union organizations were in the square too, but liberal and civil society voices dominated the digital conversation about events.

Events in Egypt not only helped spark protest movements in neighboring countries, they also seeded a global conversation about the politics of freedom. Twitter was used to draw the international community into Egyptian events. Real-time conversations about protester turnout, regime response, and Mubarak's political options did not just occur between Egyptians. Elsewhere, we have found that as domestic and international pressure for Mubarak to resign was building, there was an interesting shift in the geo-data of people tweeting about political change in Egypt. Two weeks prior to his resignation, we find that 34 percent of the tweets on the topic of political change in Egypt were coming from people who self-identified as being outside the region entirely. But as public engagement with political protest grew in the week prior to his resignation, the relative contribution of outsiders dwindled to just 12 percent: in other words, the vast majority of tweets were coming from people who were either in the country or in the region, or had refused to give their location information (a common strategy for political protesters). The regime's interference with digital networks interrupted online traffic on some days.

Yet in-country Twitter traffic peaked on the day street protests reached into the thousands and then peaked again during the last days of Mubarak's hold on power. Over time, the number of Egyptians in Egypt tweeting about politics surpassed the number of individuals tweeting from elsewhere in the region.

Social Media's Centrality to Political Conversation

Between November 2010 and May 2011, the amount of content produced online by major Egyptian political actors increased significantly as they reacted to events on the street and adjusted strategy to compete for the affinities of newly freed Egyptian voters. Some observers have been skeptical of social media's relevance to the evolution of political conversations in Egypt. But we find that in Egypt, Facebook and Western news media are central to online political discourse. We mapped the digital space in Egypt twice, once in November 2010 and a second time in May 2011. What we found was that Egypt's major political actors often linked to social networking and news services. In fact, major Egyptian political websites were far more likely to link to Facebook or Western media sites like CNN than they were to each other. For Egyptians, Facebook and other social media are not simply sites used for entertainment or managing their personal lives. These social media are where Egyptians go to practice politics. Political parties have learned this over the past few months, and are working hard to put new content online and connect with potential supporters—some of whom may be voters in upcoming elections.

In November 2010, more than 20 percent of the 928 links going out of Egyptian political party websites were to social media sites such as Facebook, YouTube, and Twitter, and to blogging tools or Western news websites such as the BBC or CNN. By May 2011, however, this had dropped to 15 percent of 1,332 outgoing links. Table 3.1 highlights the number of pages, unique external links, and overall size of the websites of major political groups in Egypt, both before the revolution and after. Groups that were unlicensed by Mubarak's government are indicated with an asterisk (*). Both the number of pages and the volume (in megabytes) are good indicators of the overall size of the website, though the first may be a good measure of text content and the second a measure of multimedia content. The number of unique external links is a good indicator of how much a political party connects its ideas and content to larger political conversations. Table 3.1 reveals something about how the structure of political content online changed before and after the popular uprising in Egypt.⁴

Table 3.1 Online Structure of Egyptian Political Parties, Before and After Revolution

<i>Political Party, URL</i>	<i>Before Revolution</i>			<i>After Revolution</i>		
	<i>Pages</i>	<i>Unique External Links</i>	<i>Volume (MB)</i>	<i>Pages</i>	<i>Unique External Links</i>	<i>Volume (MB)</i>
April 6 Youth Movement, 6april.org	..	..	..	378	8	48
Communist Party of Egypt*, cpegypt.tk	1,297	248	62	3,379	9	190
Egyptian Greens, egyptiangreens.com	441	2	16	527	2	17
Kefaya Movement*, harakamasria.org	4,372	90	24	4,522	78	25
National Association for Change*, taghyeer.net	1,983	2	35	..	..	..
National Democratic Party, ndp.org.eg	1,343	11	43	..	..	..
New Wafd Party, alwafdparty.org	78	..	9	2,015	11	165
Progressive Nationalist Unionist Party, al-ahaly.com	1,583	12	22	323	7	7
Socialist Labour Party, el3amal.net	304	7	2	615	6	4

(continued)

Table 3.1 (continued)

Political Party, URL	Before Revolution			After Revolution		
	Pages	Unique External Links	Volume (MB)	Pages	Unique External Links	Volume (MB)
Muslim Brotherhood (Arabic)*, ikhwanonline.com	6,123	66	137	7,948	67	459
Muslim Brotherhood (English)*, ikhwanweb.com	4,372	896	196	4,579	739	386

Note: Groups marked with an asterisk (*) were illegal political parties until recently. MB refers to megabytes of content.

The network structure of Egypt's online political parties and pressure groups, along with the unique external websites originating from a group's homepage, is mapped in Figures 3.3 and 3.4. The shaded circle around a group's origin node represents the volume of pages within that site (the diameter of each circle directly represents the amount of content, in megabytes, that each site hosts). Comparing the ratio of unique external pages to a site's volume indicates how much any given site is relying on external and self-produced content. In the network map of Egypt's online political sphere, each dot represents an external link originating from the political parties' websites. When two dots connect, it is a site that two parties linked to and any links position political parties closer together based on the program's algorithm. We can see the clear arrangement around blogs and state-run media sites.

In May 2011, Western social media and news outlets were still at the center of the online Egyptian political network. The majority of common links between Egypt's political parties were commercial, Western sites. The most central of these sites were Facebook, Google, YouTube, CNN, Yahoo!, Blogger, BBC, Flickr, Twitter, and Wordpress. Notably, none of the websites crawled in November 2010 linked to Al Jazeera, and there were only six outgoing links to Al Jazeera when the crawl was repeated in May 2011.

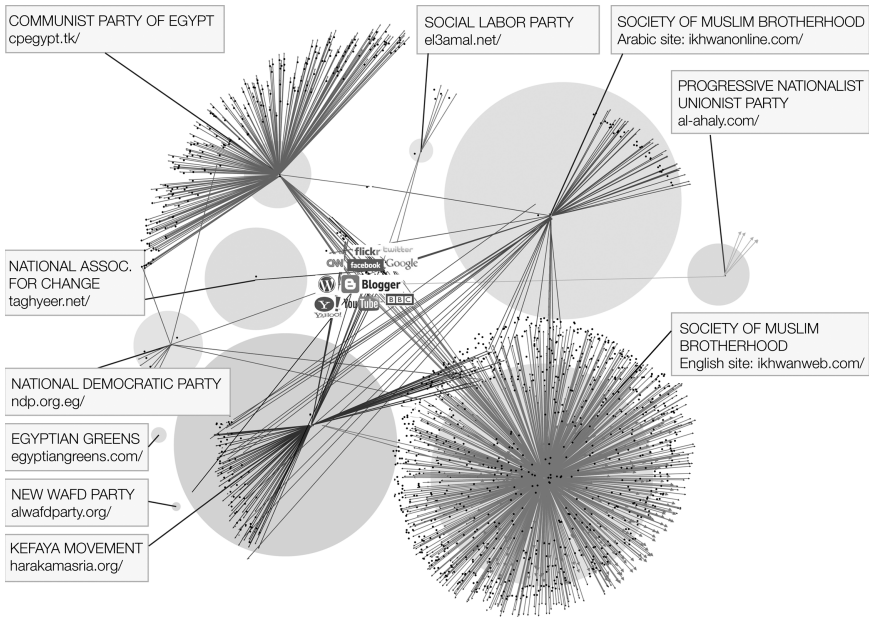


Figure 3.3 Pre-Uprising Structure and Content of Egypt's Online Political Sphere, November 2010.

Source: Howard, Duffy et al. 2011.

The results of the May 2011 network generation show that the same Western media are still present, but are now oriented along the periphery of the Muslim Brotherhood's websites. And while links to Western media are found on many Egyptian sites, the Muslim Brotherhood provides a surprising amount of new content in both its Arabic and English language sites. In terms of pages, the Arabic version grew by almost 60 percent, and in terms of size it more than tripled. Considering how large the Muslim Brotherhood's Arabic language website is, it is interesting to note how relatively few links it made to outside news sources or content from other political actors. The tendency to have active linking within the community with little activity moving outward may indicate that the Muslim Brotherhood relies primarily on digital media for organizational deliberation. Indeed, this organization had an active community of citizen journalists and civic bloggers who were forced to discuss political issues online because of the Mubarak regime's strong offline censorship.

The National Democratic Party's website (ndp.org.eg) is no longer in service. The last publicly available versions of the site were cached in Google's search engine on February 26, 2011. There is no redirect, so it appears that the host servers have been taken offline. The April 6 Movement, which had a

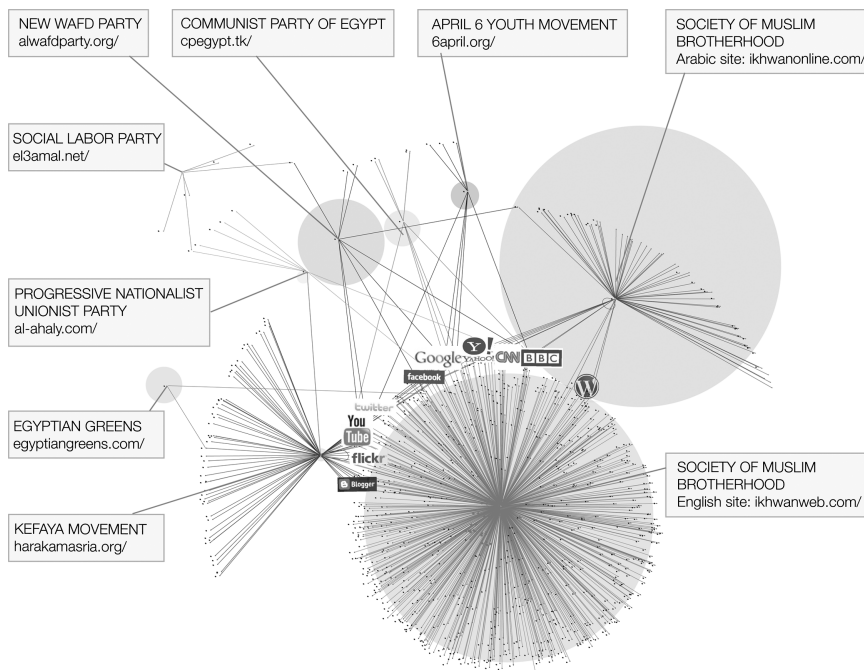


Figure 3.4 Post-Uprising Structure and Content of Egypt's Online Political Sphere, May 2011.

Source: Howard, Duffy, et al. 2011

central role in the uprising, barely existed as a standalone URL in November 2010 because most of its content was not on its own website but almost exclusively on social networking platforms like Facebook and Twitter. The National Association for Change and the National Democratic Party ceased to exist after the uprising.

The Muslim Brotherhood's Changing Online Content

Even today, Facebook remains one of the most central nodes in Egyptian networks of political information. In November 2010, before the political uprising, the websites of major political actors had more links to Facebook and other Western media than they had to each other. By May 2011, Facebook was still central, but with Mubarak's departure, the volume of digital content produced by the Muslim Brotherhood has come to dominate these networks.

The most significant change in how political parties operate online involves two of the websites of the Muslim Brotherhood. In November 2010, these

websites had 10,495 pages, with 962 outgoing links and 333 megabytes of content. By May 2011, this had evolved to 12,527 pages, 806 links, and 845 megabytes of content. In other words, the number of web pages had grown by 19 percent, the number of outgoing links had diminished by 16 percent, and the volume of content had ballooned by 154 percent.

The Muslim Brotherhood's presence on English and Arabic websites was dominant in Egypt's online political sphere before the November elections began and has grown significantly since then, particularly with respect to content. The Brotherhood's English site links to much more external content than its Arabic site, but it is a smaller site in terms of hosted content. This may indicate that when seeking to inform their English-speaking audience, the Muslim Brotherhood provides more links to external content to build legitimacy. It may also indicate that there is more English content than Arabic content available to link to. The Arabic version of the site has fewer external links (90 percent fewer) and more hosted content (159 percent more) than the English version.

The Muslim Brotherhood is actively developing its own social media sphere, with *ikhwantube.com* and *ikhwanbook.com*—websites that offer much of the functionality of Western namesakes like YouTube and Facebook. As regional experts might expect, the Muslim Brotherhood and Communist Party of Egypt share a number of links to the same kinds of content. Both parties were the major opponents to Mubarak's ruling National Democratic Party. Since the November 2010 elections, both parties have increased the amount of content they have online.

Streaming Video Made Democratic Aspirations Viral

YouTube became a particularly important tool for spreading news and information of Egypt's uprising around the world. Elsewhere, we identified the top viral videos as of June 2011 (Howard, Duffy et al. 2011). While it is difficult to measure the precise impact of these videos on audiences, some images of suffering certainly would have spurred protests and heightened moral outrage.

The first significant Egyptian video went viral on January 25, 2011. The video depicts thousands of protesters converging on Tahrir Square. The images were captured by an amateur cameraman looking out of a building near the main road. Based on the metadata reported on the uploader's YouTube account, the video was distributed by an account registered as located in the

United States. Since then, this video has accumulated more than 600,000 views. Based on tracking of the embed code, it is most likely that the video received popular attention after being posted on AllMania.com, a sports commentary site that experienced a 600 percent increase in traffic in January 2011.

RussiaToday's YouTube channel contributed five of the top-20 viral videos, totaling 1,200,000 cumulative views. These videos were from citizen journalists and included live footage rebroadcast through the news agency's outlets. Al Jazeera English's YouTube channel similarly contributed three videos, totaling more than 300,000 views. Reuters's YouTube channel contributed one video totaling more than 200,000 views. Between May 16 and 20, 2011, we hand coded the most prominent videos loaded into YouTube with the keyword "Egypt" for author, viewing, and creation date information.

We found 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 video featured a homemade 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 people's protests. This music video, uploaded on January 27, was the single most popular viral video for the Egyptian revolution, and it accounted for 25 percent of the top-20 video views.

Gender Politics and the Politics of Inclusion

Digital information technologies mediate gender politics in unexpected ways. In the political economy of media, women are playing more dynamic roles in television and film both in front of and behind the camera. But women have, in the opinion of some observers, aggressively invaded the new public space created by digital media (Mernissi 2004). Marcotte, for example, has examined religious discourse regarding gender and sexuality, where forums have been essential spaces to challenge, contest, and even transgress traditional norms (Marcotte 2010). Some have even observed in very conservative societies and families, that Muslim women have begun to participate economically by running their own private online businesses (Ardalan 2002). First,

digital media are allowing citizens to learn about the status of women and gender relations in other countries. Second, they also allow both men and women to debate specific gender issues relevant in their own cultures (Stowasser 2001). Third, the arrival of digital media in many Muslim communities and households has become an occasion for renegotiating and restructuring gender relationships. Finally, the internet supports women-only online communities, which have become sites for political conversation away from both patriarchal leaders and the public gaze of journalists. Political elites in some countries restrict internet access to prevent such cultural learning, discussion, and negotiation.

The introduction of new digital media does not simply provide the opportunity to redress gender disparities in developing communities; it is providing a platform for learning about gender politics. Three factors impede learning about gender politics in Muslim countries. First, new internet users rarely have the ability to conduct sophisticated searches and critically assess the content they find. This comes with practice, along with coaching from friends and family. Second, political elites in some countries actively work to discourage state programs from providing women with media training and access, or actively block listservs, blogs, and chat rooms where young Muslims can have some discourse on gender issues. Third, government regulators establish content filters that block websites they judge to be antithetical to the established edicts of gender relations in their country or according to their interpretation of Islam.

There is a growing literature about how exposure to digital media has an impact on users' levels of tolerance and empathy (Brundidge and Rice 2009; Robinson, Neustadt, and Kestnbaum 2004). For many young Muslims, the online social networking applications and other content are the media by which they learn of life in other countries where faith and freedom can coexist. Networked information technologies are, at the very least, partly responsible for exposing citizens to liberal cultural values. Certainly some internet users in these countries can be radicalized through their internet use, but many will be sensitized through the internet. And in the case of Saudi Arabia, it may be the broadcast media on state-authorized channels that do more to reinforce conservative and Wahabbist interpretations of Islam. In Egypt, the broadcast media are certainly used to advance secularist perspectives of the role of faith in statecraft. One of the next steps in researching the impact of digital media in countries with large Muslim communities will be to investigate the overall impact of internet use on tolerance.

Social Networking, Digital and Otherwise

For the most part, public opinion in countries with large Muslim communities has been a construction of ruling elites and state agencies. By so constraining the media diets of citizens, the ability of journalists to investigate popular sentiment, and the ability of researchers to survey the public, the boundaries of what constituted the “public” have been fundamentally constrained and knowledge of “opinion” deliberately kept vague. Today, political parties are using the internet to construct political opinion in a different way. By deeply integrating digital tools such as mobile phones and the internet into their systems of political communication, parties are able to reach and activate much larger numbers of people. In this way, the internet is actively used to challenge the basic relations of power because political parties use it to amass publics that were not previously reachable. Moreover, even where regimes allowed official opposition parties, the political actors who agreed to play by the rules of conduct had an easier time controlling broadcast media. Social networking applications have provided a new structure for the flow of political news and information, a structure that does not easily provide political elites with informational choke points. Without mandatory points of passage for political content and digital hosting services beyond the territorial control of these governments, social networking applications have had implications for who counts as the political public.

In countries where a handful of state agencies own the major media outlets, it is possible to define the public through the selection of topics covered in the news, through the framing of stories, and through the gender and ethnic representation of people who appear as journalists and as characters in news stories. It is rare, for example, to have immigrant Bengalis, Pakistanis, and Indians canvassed for opinion in the nightly newscasts in Saudi Arabia or the United Arab Emirates (UAE). Increasingly, the internet has become an alternative information source, one that holds content related to those minority voices.

But public opinion is not shaped by the internet in the sense that lots of citizens find interesting new public policy options online, but in the sense that these major media outlets have added the internet to their tool kit for measuring—and manipulating—public opinion. Media systems in these four countries were designed by the elites to make for easy manipulation by autocratic leaders or the Saudi royal family. Autocrats, by definition, work to constrain the size and diversity of their publics through media systems that distribute limited content to carefully defined groups. And it is the political

parties, legal or not, that best use the internet to extend the definition of who the public is, by expanding their membership and increasing the rate of active contact. The social networking applications that facilitate the passage of political content over networks of family and friends provide not simply a competing media system but an alternative structure for distributing information.

Conclusions

Social media played a crucial role in the political uprisings 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. But perhaps the most powerful evidence that digital media mattered in the Arab Spring comes from activists themselves.

Researchers with the *Arab Social Media Report* interviewed over a hundred protesters from both Tunisia and Egypt. In both countries, Facebook users were of the opinion that Facebook had been used primarily to raise awareness within their countries about the ongoing civil movements, spread information to the world about the movements, and organize activists and actions. Less than 15 percent in either country believed Facebook was primarily being used for entertainment or social reasons (Noman 2011). Surveys of participants in Tahrir Square demonstrations reveal that social media in general, and Facebook in particular, provided new sources of information the regime could not easily control and were crucial in shaping how citizens made individual decisions about participating in protests, the logistics of protest, and the likelihood of success. People learned about the protests primarily through interpersonal communication using Facebook, phone contact, or face-to-face conversation. Controlling for other factors, social media use greatly increased the odds that a respondent attended protests on the first day, and half of those surveyed produced and disseminated visuals from the demonstrations, mainly through Facebook (Tufekci and Wilson 2012).

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 long-standing dictators.

Anecdotally, we know that social media played an important role at key moments in the events of 2011. 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? The previous 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 have several kinds of impact on local systems of political communication. First, social media provide 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 foster 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-form 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 tool kit used to protest for freedom.

While several well-placed civic leaders and activists used digital media to organize political uprisings and communicate with the world, digital media were also used by regimes to respond to insurgencies. It would be a mistake to proceed without evaluating the ability of authoritarian regimes to use digital tools in their counterinsurgency strategy, so the next chapter evaluates the force of response—and degrees of success—that some governments had to the surge of popular protest for democracy.

Notes

Acknowledgments

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Chapter 3

1. Demographic data from the CIA World Factbook and World Bank's World Development Indicators database. Technology use data from the International Telecommunications Union.
2. The data for Twitter and blog trends were collected by the Project on Information Technology and Political Islam. 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,” “#sidibou-
zid,” and “#yemen.” Since these archives were initiated by different users at differ-
ent times, they do not all cover the same time period. The earliest, #sidibou-
zid, begins on January 14, 2011, and the last tweets (in multiple hashtags) occur
on March 24, 2011. TwapperKeeper experienced system overloading at several
times during this period, resulting in coverage gaps within some of the archives.
But even for archives with no gaps, it is highly unlikely that TwapperKeeper’s
archive captured all relevant tweets due to limitations imposed by Twitter.
All six archives combined contain a total of 3,142,621 tweets, some of which
undoubtedly overlap because each tweet could contain multiple hashtags. More
than 75 percent of these (2,363,139) are from #egypt. This method omits some
unknown number of in-region tweeters due to blank location fields, deleted
accounts, and garbled information in the fields.

Twitter changed its terms of service on March 20, 2011, to disallow public
sharing of tweets. The archives analyzed in this report were queued for down-
loading from TwapperKeeper on March 19, 2011, but due to the backlog of
similar requests from other users, the downloads did not become available until
several days later (which is why some of them include tweets added after March
20). The archive dates for specific hashtags vary, and the earliest data points
come from #egypt on January 5, 2011. All tracking ends March 20, 2011, due
to Twitter’s terms of service change. TwapperKeeper, the service used to track
hashtags, was crippled (See [www.readwriteweb.com/archives/how_recent_
changes_to_twitters_terms_of_service_mi.php](http://www.readwriteweb.com/archives/how_recent_changes_to_twitters_terms_of_service_mi.php)).

The hashtag archives included a wide array of metadata along with each
tweet, including the author’s name, the GMT it was posted, and the applica-
tion used to send it, among other information. However, authors’ self-reported
location field was not included. To gather this, a list of unique users from each
hashtag was created via a custom hypertext preprocessor (PHP) script. Each list
was then used as an input into a second PHP script which automatically saved
each user’s location field from the Twitter REST API (representational state
transfer application programming interface). Due to restrictions on the number
of requests that can be sent to Twitter’s REST API per hour, the user locations
had to be collected one archive at a time. Location collection for the largest
hashtags took longer than a day, with the exact amount of time depending on
the number of unique users that contributed to it. Ultimately, between 25 per-
cent and 40 percent of the unique users in each archive lacked any location data.
Reasons for this included simply leaving the field blank, deleting one’s account,
or having it suspended due to misuse.

Once this script had finished collecting the location fields for all unique
users from each hashtag archive, each data file was subjected to a word filter
that attempted to automatically classify each user-provided location into one

of four categories: (1) within the hashtag country; (2) within the broader Arabic region; (3) outside both the country and the Arabic region; and (4) no provided location. The first two filters consisted of a simple string-matching search pattern that sought the English name of each country along with the names of the top five cities by population in each country. The sole exception to this was for countries with less than 5 percent internet penetration, for which only the capital city was used in addition to the country name. Because many user-provided locations came in the form of latitude-longitude coordinates or were written in other languages, we decided to convert these into English before applying the filter. Google's reverse geocoding service was used for the former and Google Translate was used for locations written in Arabic script. Manually reading the translated locations, we were able to identify additional city names within the Arabic region that recurred often, so we added these to the word filter.

The procedure described here resulted in a dataset for each archive that consisted of each unique username and its category ID as determined by the word filter. To combine the category IDs with the full tweet data, each pair of archive files (consisting of one full tweet set and one list of unique names and category IDs) was loaded into a MySQL database hosted on a virtual Linux computer hosted by Amazon's commercial cloud. Custom structured query language (SQL) queries were used to automatically graft each unique user's location to each appearance of that user within the archive. Another SQL query tallied the number of tweets in each full archive classified as coming from a user in the hashtag country, in the broader Arabic region, outside of the country and region, and with no location. These summaries were aggregated by date and used to create time-series charts showing the posting dynamics of each location category.

3. The data for Figure 3.1 come from our analysis of the Tunisian blogosphere. This dataset was created using the eCairn Conversation archiving and analysis service. The tool was used to capture the flow of information through blog posts from Really Simple Syndication (RSS) feeds for Tunisia's key blogs. The captured data-streams begin on November 20, 2011, and end on May 15, 2011. A total of 475 key Tunisian blogs contributed a total of 26,000 posts during this period. A number of languages are represented in the Tunisian blogosphere, including Arabic, French, and English. We were able to analyze blog centrality through eCairn Conversation, and 17 of 475 blogs were identified as the main information gateways for the Tunisian blogosphere. In order of centrality, they are Tunisie Blogs; Wallada; Extravaganza; Tn-Bloggers; Boukornine; *مدونة كاليماو*; Venus et Moi; Barbach; Tuniblogs; Notes; Carpe Diem; *L'universe de Narwas*; *ميادين*; Desenchantee; *ولد بيـرسا*; Mon Massir; and Blogger. These 17 blogs (3.6 percent of the Tunisian national blogosphere) were linked to the remaining sphere of 475 blogs, of which 76

(16 percent) were located in a medium level of network centrality, 262 (55.1 percent) were in low network centrality; and 120 (25.2 percent) were network outliers and did not link to or share much dialogue with the rest of the Tunisian blogosphere.

Almost all of the 17 core blogs in the Tunisian blogosphere have been hosted within Tunisia. According to IP addresses, the cities of Tunis and al-Hammah have had the most prominent bloggers. The most central blogs in Tunis were El Fan, Tuniscope, and Tekino (all had medium network centrality in the larger Tunisian blogosphere). The most central blogs in al-Hammah were Tunisie Blogs, Tn-Bloggers, and Barbach (all had high network centrality in the larger Tunisian blogosphere). Interestingly, al-Hammah was a more critical location for the Tunisian blogosphere than Tunis. In addition, there have been several prominent Tunisian blogs maintained by people in the Tunisian diaspora. For example, the blogs *Stupeur*, *Houblog*, *Arabasta*, and *Chroniques Absurdes* were located in Montreal or Paris, belonged mostly to Tunisian expatriates, and were key mid-level blogs in the Tunisian national blogosphere.

The keywords identified for the analysis were determined using eCairn's conversation analyzer. The application used text search and identification algorithms to assess word frequencies and proximate phrases. This allowed us to specify Ben Ali, Bouazizi, Economie, Islam, Revolution, and Liberty as important conversation items in the Tunisian national blogosphere. After identifying important keywords, we reverse-analyzed their presence through time-series analysis. The discussion of Bouazizi and Liberty was consistently less frequent than other keywords, so were dropped from Figure 3.1. By sub-selecting the portions of the blogosphere that frequently mentioned different key words, we were able to investigate their particular network-structures. For example, the keywords appearing less frequently (e.g., Islam) had less network heterogeneity and were composed of less and mostly low-influence blogs. In contrast, blogs mentioning popular keywords (e.g., Revolution) had more network heterogeneity and were composed of larger, more diverse, and more high-level influence blogs driving those conversations. Put more simply, the networks of blogs within the Tunisian national blogosphere that were more diverse, cross-linked with others, and were key information gates were able to drive different topics of conversation more successfully than smaller and more homogeneous blog networks.

4. A comprehensive list of Egypt's political party and political pressure group data was built using both the Central Intelligence Agency's World Factbook, Wikipedia, and some specialized Egyptian political blogs anticipating that this combination of "official" and "unofficial" data could bring major and minor, new and established parties to the list. Several search engines and media databases were consulted to confirm the URLs for parties that had websites. In the pre-uprising dataset, a total of 1,332 external links were found across 10 active websites, of which 1,225 were unique and 102 were linked to by more than

one site. In the post-Mubarak dataset, a total of 927 external links were found across 9 active websites, of which, 828 were unique and 99 were linked to by more than one site. We searched for party websites in Arabic, in English transliterations of Arabic party names, and for the official English names of parties. To analyze the structure, the Web Data Extractor crawled each political party's URLs and extracted all external-facing URLs on the entire directory. All links from the first dataset were collected by the Web Data Extractor from November 11 to November 13, 2010, and all links from the second dataset were collected between May 3 and May 6, 2011. An XML based add-in for Microsoft Excel 2007 called NodeXL, developed by a team funded by Microsoft Research, was used to create network maps with the data like that pulled from the Web Data Extractor. NodeXL generated the Network Linkage Map between Political Parties in Egypt in Figures 3.3 and 3.4. An arrangement of nodes and clusters, the map is based on the Harel-Koren algorithm, which groups the nodes (individual sites as dots) based on common external links.

Conclusion

1. The full dataset of all variables in the causal recipes described in this investigation is available at www.pITPI.org, as are the technical scripts for secondary solution sets not described here and the calibration points for specific membership sets.

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