This article was downloaded by: [Temple University Libraries]
On: 07 January 2015, At: 09:31
Publisher: Routledge
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK

Political Communication

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/upcp20

Media Disruption and Revolutionary Unrest: Evidence From Mubarak's Quasi-Experiment

Navid Hassanpour [a]

[a] Navid Hassanpour is a Ph.D. candidate in the Department of Political Science , Yale University

Published online: 30 Jan 2014.

CrossMark

Click for updates

To cite this article: Navid Hassanpour (2014) Media Disruption and Revolutionary Unrest: Evidence From Mubarak's Quasi-Experiment, Political Communication, 31:1, 1-24, DOI: 10.1080/10584609.2012.737439

To link to this article: http://dx.doi.org/10.1080/10584609.2012.737439

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms &

Conditions of access and use can be found at http://www.tandfonline.com/page/terms-and-conditions

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Political Communication, 31:1–24, 2014
Copyright © Taylor & Francis Group, LLC
ISSN: 1058-4609 print / 1091-7675 online
DOI: 10.1080/10584609.2012.737439

Routledge
Taylor & Francis Group

Media Disruption and Revolutionary Unrest: Evidence From Mubarak's Quasi-Experiment

NAVID HASSANPOUR

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Conventional wisdom suggests that universal lapses in media connectivity—for example, disruption of Internet and cell phone access—have a negative effect on political mobilization. On the contrary, I argue that sudden and ubiquitous interruption of mass communication can facilitate revolutionary mobilization and proliferate decentralized contention. A dynamic threshold model for participation in network collective action is used to demonstrate that full connectivity in a social network can hinder revolutionary action. I exploit a decision by Mubarak's regime to disrupt Internet and mobile communication during the 2011 Egyptian uprising to provide an empirical test for the hypothesis. An interrupted time series inference strategy is used to gauge the impact of media disruption on the dispersion of the protests. The evidence is corroborated using historical, anecdotal, and statistical accounts. In line with the theory, the results of a survey among Egyptian protesters show a significant decline in the percentage of participation in Tahrir Square as a fraction of total participation across Cairo on the first day of media disruption.

Keywords dynamics of protest, 2011 Egyptian uprising, information cascades, learning, media disruption, mobilization, political violence, revolution, social networks

Following 3 days of unrest and to counter the growing urban protests across Egypt, in the early hours of January 28, 2011 Mubarak's regime shut down the Internet and cell phone networks across the country. The events of the next day suggest the incumbent's tactics were misguided. The protests in Cairo, which were mostly contained in Tahrir Square and surroundings up to that day, proliferated across the city and flared in every corner of Cairo. By 6 p.m. on January 28, the police forces were overwhelmed, and the military was called in to replace the police. In the following days, a practically neutral military played a major role in the political developments of the country, resulting in the ouster of Mubarak on February 11.

In this study, I examine the role of media at the time of the revolutionary unrest and argue that the disruption of the media across Egypt in the early morning hours of January 28 contributed to the proliferation of the unrest and fostered revolutionary contention of a decentralized nature. Disrupting media sometimes is a byproduct of paralyzing unrest; often it is the result of a governmental crackdown. In both cases, I will argue that the disruption acts as a catalyst for the revolutionary process, hastening the disintegration of the status quo (*the dispersion hypothesis*). The recent Egyptian uprising provided a unique opportunity to put such a hypothesis to the test.

Navid Hassanpour is a Ph.D. candidate in the Department of Political Science, Yale University.
Address correspondence to Navid Hassanpour, Department of Political Science, Yale University, 115 Prospect Street, New Haven, CT 06511, USA. E-mail: navidhassanpour@yale.edu

The disruption of media prior to major revolutionary upheavals is not limited to the case of the Egyptian revolution of 2011. On November 6, 1978, in solidarity with the other factions of Iranian society and in opposition to the Shah's newly appointed military government, Iranian journalists and newspaper staffers announced an indefinite strike, plunging the country into an information blackout for 2 months until the reopening of the press on January 5, 1979. The largest demonstrations of the Iranian revolution of 1979 took place during this news industry hiatus on December 10 and 11, 1978.[1] The information vacuum was filled with audio cassettes, pamphlets, and other decentralized means of face-to-face communication. Not surprisingly, during Tehran's post-election protests of 2009, the authorities repeatedly disrupted mobile communications and Internet-based social media but never imposed a universal blackout.

Similarly, on the 25 of February 1917, in the midst of an urban revolt, Petrograd newspapers ceased publication just a few days before the Duma's dissolution. They resumed circulation on the first of March, after which the Duma acted quickly to limit and control the actions of the press.[2] The proliferation of protests occurred on the 26th, shortly after the disruption of normal communications across the city on the 25th. The violent response to the unrest on the 26th culminated in an army rebellion and the takeover of the Duma on the 27th (Hasegawa, 1981; Wade, 2005). While both of the above examples hint at the disruption of media as a revolutionary catalyst, the abundance of microlevel information on the Egyptian case provides a more reliable test of the hypothesis.

As is clear from the examples above, the discussions apply to the examples of urban revolts in densely populated areas, in which there is a potential for effective face-to-face communication once the media of communication are shut down. When substitute communication strategies are unlikely (e.g., in the case of peripheral insurgencies), disrupting communication can effectively weaken the rebellion, as was the case for the Libyan insurgency in March 2011. The rebels had to restore the network in order to continue their advance toward the Libyan capital (Coker & Levinson, 2011).

The structure of the article is as follows: In the first section, I discuss the role of information regimes in revolutions and examine network collective action in relation to media. Then I study media disruption in the context of underlying social networks and outline structural dynamics that can contribute to the proliferation of protests. The same dynamics lead to the dispersion hypothesis outlined in this section. In the second section, I employ microlevel data on the dynamics of contention and media disruption during the Egyptian uprising of 2011 in order to provide an account of the underlying processes that helped to increase the dispersion of the protests. The third section concludes the article.

Dissent and the Media

The debate on the role of the media in social unrest was revitalized during the Arab Spring and in the ensuing commentary. In the past two decades, the rise of the Internet and decentralized online communication coincided with numerous instances of mass uprisings across the world. Many analysts have taken the social media to be an indispensable part of the mobilization process in mass protests in places as diverse as Ukraine, Iran, Moldova, Thailand, and Egypt (Howard, 2010). Various arguments have been put forward: Some suggest that new technology makes coordination easier, while others highlight the role the new media play in broadcasting scenes of confrontation to the outside world, thereby encouraging the aggrieved population. Monitoring communication in the context of the social media also seems to be more difficult (Shirky, 2008). On the other hand, others have emphasized the novel opportunities for control and surveillance through social media (Morozov, 2011).

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

While the role of social media in coordination and organization is undeniable, the proponents of such arguments overlook several issues. Social media can also mitigate grassroots mobilization. They discourage face-to-face communication and mass presence in the streets. In addition to issuing calls to action, and similar to more traditional and highly visible media, they create greater awareness of risks involved in protests, which in turn can discourage people from taking part in demonstrations. In the following, I will argue that lack of credible information at times benefits cascades of contention.[3] Kern and Hainmueller (2009) cite similar processes as an explanation for why watching West German television broadcasts might have discouraged East Germans from applying for visas to travel to the West: Once they saw it on television, they were less likely to embark on a personal exploration to see the unknown. Similarly, knowing about the situation on Facebook and Twitter and having access to news propagation sources make personal moves and physical presence unnecessary. Livestreaming the events obviates face-to-face communications for collecting news.

The lack of intermediary sources of communication between the state and the people fosters local news production and propagation on the individual level, deprives the state of a normalizing apparatus, and sets the stage for cascades of collective action. In the absence of the media, information is communicated locally.[4] Without state intervention, crowds shape an idea of risk that is independent from the government, testing their perceptions by staging demonstrations. The government's response to the acts of public defiance signals either weakness or strength on the side of the state (Chwe, 2001; Kuran, 1991). If the demonstrators' speculations about the weakness of the incumbent regime are correct, as they were in Tehran in December 1978 (Rasler, 1996) or Leipzig in 1989–1990 (Lohmann, 1994), the cascade of events can grow to unanticipated dimensions.

In addition to transforming information structures among constituents, an abrupt and universal media disruption sends a strong signal to the people, either warning them of a crisis situation or informing them of a debilitating disarray in the hierarchy of power. Not only summary censorship of public media, but also subtle changes in the makeup of the press, can give signals to the opposition. Stein [2008] notes a Latin American example in which politically irrelevant articles published during censorship campaigns acted as encouraging signals to the opposition. Hence, censorship relayed a secondary message (Zaller, 1992) against the wants of the authoritarian government. Similarly, King, Pan, and Roberts (2013) find the Chinese censorship operations to be a preamble to the regime's political actions. Therefore, in their analysis censorship activities provide a predictive tool for gauging the government's impending reaction to opposition.[5]

In spite of the mixed results of summary media shutdown, authoritarian regimes have repeatedly interfered with online media, citing "national security" and "public good" concerns (Howard, Agarwal, & Hussain, 2011). In reality, most of the incumbents who engage in such disruptions view online mobilization as a formidable organizational tool. Facing growing unrest and heightened anxiety, they act to preempt opposition networks. An example of this dynamic was on display in Egypt, where the Facebook page "We Are All Khaled Said" became a rallying point for the Egyptian protesters prior to the eruption of the protests on January 25. The Egyptian government was compelled to react.

Revolutions and Misinformation

Disruption of media generates brief moments in which the outreach of news-making and information propagation industries does not exist or is interrupted. When the normalizing force of the media collapses, production of opinion outside the reach of the incumbent

regime can force the polity to change course under the pressure of an opposing public sphere.[6]

In a society on the verge of political unrest, the state's control over news media prevents widespread dissatisfaction from turning into a united opposition. Media outlets are highly visible and not hard to control. The population that relies on the media for estimating the political atmosphere is provided with a view that is also visible to the ruling power. In turn, based on what they see, the elite use their influence to pacify the population or discourage sedition. A realist depiction of state repression can prevent opposition and normalize the situation. Nevertheless, this is a process that is different from the widely acknowledged role of the media during revolutions. According to this point of view, media disseminate knowledge and awareness. The constituents are informed about political possibilities and grievances; therefore, they are more inclined to engage in a resurrection against oppression and incompetence.[7] However, this argument can be qualified on two grounds. First it overlooks the fact that most seditious communication is invisible to the ruling elite. If they were aware of it, they would disrupt it. Centralized and social media used for news propagation are too exposed to foster revolutionary violence. Second, those who engage in radical acts of dissidence usually are not primed by potential free discussions in the press. Unrestricted exchange in public media excites the intelligentsia and is more likely to result in political transitions of more usual types. What incites mass revolts is "misinformation" properly defined. Consider the case of the Velvet Revolution in Czechoslovakia. According to recent accounts, the movement was ignited by false rumors of the brutal death of a 19-year-old university student (Bilefski, 2009). At times of civil unrest, exaggeration tactics are known to be highly effective. In a similar manner, the fall of the Berlin Wall started with a false and ambiguous statement at a news conference (Sarotte, 2009). A vaguely communicated decision, broadcast on Eastern German television, prompted protesters to demand free passage to the western side of Berlin.

A ubiquitous disruption of media and means of communication plunges a society in to a blackout, facilitating connections that are highly local and hard to discern through the public eye. The shutdown of the Internet and cell communications in Egypt in the early hours of January 28, 2011, facilitated a similar process. The impact of such interruptions on mass mobilization is not trivial, because on one hand they encourage clandestine and imaginative escapades, while on the other they discourage global coordination. To examine the effects of such sudden disruptions, one needs to find situations in which social media connectivity and mobile communications change sharply, then gauge the impact of such a change on the level of unrest. One example of such consequences is the potential localization of protests.[8] Later I will show that the Egyptian government's disruption of mobile communication and the Internet can be used to test the localization hypothesis.

Dynamic Threshold Models of Network Collective Action: Connectivity Is Not Always Helpful

Media disruption drastically changes the underlying news propagation network structure and alters the modes of mobilization. In response to the disruption of strong and long-lasting links, novel but weaker connections are quickly shaped to pass on news and compensate for the information vacuum. In the aftermath of a blanket media disruption, such an effective decentralization of weakly held mobilization cores is what overwhelms the authorities.

To demonstrate the implications of network disconnection on collective action, in the following I outline an example using a stylization based on a well-known threshold

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

model of collective action proposed by Granovetter (1978) and Schelling (1978) and later expanded by Kuran (1989), Lohmann (1994), Gould (1993), Chwe (1999), and Siegel (2009), among others.

According to the threshold model, in the course of civil unrest, a decision to join demonstrations is contingent upon two factors: a personal propensity for taking risks and the actions of others. People are more likely to engage in risky action when their acquaintances and network neighbors have already taken action. According to the stylization, everybody is assigned a threshold for action. There are radicals with very small thresholds whose acts start the process. One acts if the percentage of one's social network neighbors acting is above one's threshold. In such a situation, cascades of collective action can occur. This model of collective action in networks does not assume high levels of rational decision making. Its other-regarding aspect captures the collective nature of mass demonstrations and power of numbers.

In addition to action, personal thresholds are also in flux. Gould (1993); Centola, Eguiluz, and Macy (2007); and Siegel (2009) consider dynamic versions of network games in which thresholds change over time. In Hassanpour (2010), the DeGroot learning scheme (Jackson, 2008) is superimposed on the threshold model. It is plausible to think that while interacting with others, one would be influenced by network neighbors' beliefs. When participating becomes prevalent, one's threshold could decrease, or as inaction becomes the norm, thresholds increase. In the following, I assume that the participants adopt a weighted average of their own thresholds with their neighbors'. The weights are proportional to the level of interpersonal influences.

Consider the two networks in Figure 1. One is fully connected, while the other is not. In this case, there is one centrally located radical agent with initial threshold 0 and two normal individuals with identical thresholds $0 < \tau < 1$. At each time unit, players update their thresholds based on averaging their own threshold and their neighbors' and decide to act or not. The averaging weights are symmetric, which means for each participant i, weights are $\delta_{ij} = 1/(\text{degree of } i + 1)$. The initial thresholds and the configurations are as shown below.

Note that for the fully connected graph, threshold updating gives $(2/3\tau, 2/3\tau, 2/3\tau)$ for $t = 1$ time onwards. For the action set, if $\tau < 1/2$, the final action profile will be (A, A, A) for $t = 1$ onwards; otherwise, it is (N, N, N) for $t = 1$ onwards.

For the other network, the dynamics are not trivial. Applying the dynamic model for averaging thresholds gives the progression shown in Table 1.

The asymptotic thresholds for both networks are reflected in Figure 1. Note that the fully connected graph has a larger final threshold compared to the other one (i.e., full connectedness is not always helpful).[9]

Connectivity does not always help collective action. It is usually assumed that full connectivity among participants in collective action is beneficial to the act of mobilization. The above example demonstrates how such logic might fail. Consider cases where there are few

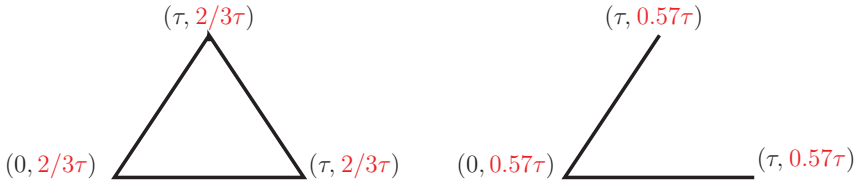

Figure 1. Asymptotic thresholds (initial threshold, steady state thresholds) for networks (color figure available online).

Table 1
Dynamics of the star network in Figure 1

Thresholds	Actions
$\tau(1) = (2\tau/3, \tau/2, \tau/2)$	$A(1) = (A, N, N)$
$\tau(2) = (5\tau/9, 7\tau/12, 7\tau/12)$	$A(2) = (A, A, A)$ *if* $\tau < 1/2$; *otherwise* $= (N, A, A)$
$\tau(3) = (31\tau/54, 41\tau/72, 41\tau/72)$	$A(3) = (A, A, A)$ *if* $\tau < 6/7$; *otherwise* $= (A, N, N)$
$\tau(\infty) = (0.57\tau, 0.57\tau, 0.57\tau)$	$A(\infty) = (A, A, A)$ *if* $\tau < 0.875$; *otherwise* $= (N, N, N)$

radicals who aim at recruiting ordinary individuals. Further connections among ordinary individuals can foster inaction. The example in Figure 1 shows that establishing separation among ordinary individuals can effectively help mobilization. This is in line with similar observations in Gould (1993) and Siegel (2009) and provides an intuitive explanation for why disrupting media and mobile communications can assist mobilization instead of impeding it. Removing regular communication channels provides radicals with more effective venues for organization and encourages citizens to frequently engage in face-to-face communications. This all weakens the incumbent's control and provides more opportunities for grass roots mobilization.

To summarize, adding more links among a conservative majority does not help mobilization. In fact, risk-averse citizens are efficiently mobilized when they are solely connected to radical elements.

Media Disruption and the Dispersion Hypothesis

During a media blackout, an individual's perceived levels of others' participation can be quite myopic. A major disruption of media and mobile communications reduces a globally connected network relying on a backbone of information-propagating nodes to a multitude of smaller local networks barely connected to each other. These local micronetworks are strongly influenced by patterns of interpersonal links and spatial confines. Because of the dispersed nature of mobilization, structural patterns inside each local network become the basis for the relations between protest leaders and the rest of the population. I argue that media disruptions influence the underlying social network structure in at least two major ways: First, they decentralize and localize contention, and second, they increase the importance of radicals, making mobilization more efficient.

Disruption of a highly connected network of the type in the left of Figure 2 forces citizens to rely on each other for gaining information about the political and social atmosphere, while the state is deprived of its direct and indirect propaganda and supervision tools. In such a situation, citizens are influenced by their peers, including their radical neighbors in their local networks. Because of the limited reach of face-to-face methods of communication, the newly built networks are highly local and not as highly connected as those induced by mobile communication and social media. The decentralization of modes of communication creates smaller communication and mobilization networks dispersed across geographical localities. In the process of a mass rebellion, these diffuse cells of contention are more difficult to control. Hence, a universal crackdown would be much more difficult. In the following section, I will argue that a similar process of decentralization propelled the Egyptian protests of January and February 2011. I use the locations of the protests as a geographical proxy for testing the dispersion hypothesis.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

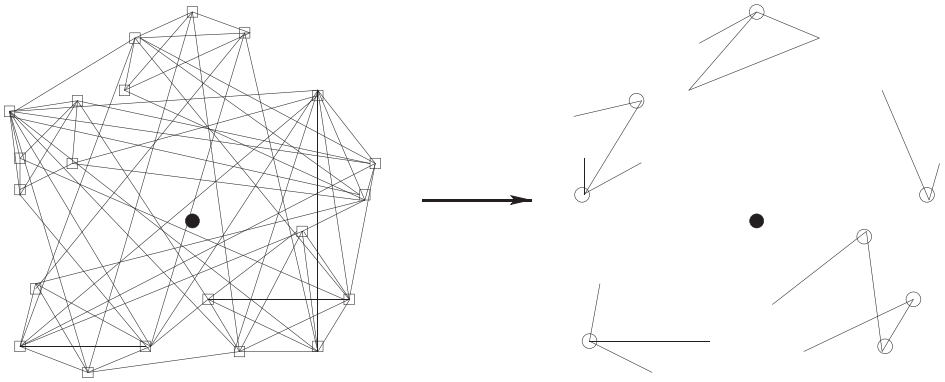

Figure 2. Fully connected (left) and local sparse (right) networks.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

In addition to increasing the diffusion of the protests, a sudden and ubiquitous media disruption helps reorient the location of vocal dissidents. Radicals become more central in the newly shaped networks. Dismantling preexisting links among the public and between the media and the population encourages building new connections. Individuals have to engage in exchanges with their immediate neighbors in order to hear the news, or to estimate the prospects of contention. Extreme conditions—brought about by disrupting mobile communications as well as the Internet—incite physical presence instead of online activity and produce new connections on the local level. In the transformed network depicted on the right side of Figure 2, radicals are centralized as (depicted in the figure) because they are the ones who actively reach out, building new links. Therefore, when the network is fully disrupted, the newly shaped web of local connections will have radicals in more central network locations. While the links among the risk-averse citizens are disrupted, as in the example above, new links between the radicals and other risk averse members are shaped, making mobilization more efficient.

New links are not as strong as those established around the preexisting media nodes. The new connections among individuals in each locale are shaped in the course of hours or a few days, giving the contention an ephemeral and diffuse nature different from the traditional modes of recruitment and organization for rebellion. Here the power of numbers lies in dispersion and decentrality as opposed to strong and hierarchical links among the opposition. This is in contrast to the widely held belief that successful collective action is conditioned upon strong and hierarchical links.[10] In each local network of weak ties, radicals exert influence and become opinion leaders.

To summarize, disruption transforms mobilization in two ways: It decentralizes contention, and it promotes activists who are more likely to build new social links relevant to the rebellion. In other words, a disruptive action meant to stop the rebellion turns to a catalyst for it.

Thus, the dispersion hypothesis is as follows: Disrupting media and mobile communications promotes local mobilization, helps empower radicals, and increases the dispersion of protests. The geographical dispersion of protests can be measured to test the hypothesis. In the following section, I use detailed reports from the Egyptian uprising of 2011 to do so.

Media Disruption and Dissent: Empirical Evidence

In this section, I test the validity of the dispersion hypothesis. I start with some suggestive archival evidence. Then I examine the case of the Egyptian uprising of 2011 in greater detail. In late January 2011, in response to demonstrations, Mubarak's regime disrupted

online and mobile means of communication all together for a few days, providing a unique opportunity for studying the role of media disruption in fostering unrest. The main criterion for testing the theory is the existence of a visible increase in the dispersion of protests after media interruption compared to the prior levels, keeping confounding factors constant. Utilizing a design based on an interrupted time series strategy (Shadish, Cook, & Campbell, 2002), I argue that the disruption exacerbated the unrest.

Ubiquitous and abrupt changes in media coverage provide an opportunity for studying the role of connectivity or lack thereof in the course of mass protests. After the introduction of new social media, such disruptions have become more commonplace. In the face of civil unrest, the authorities have frequently chosen to disrupt communication venues available to protesters (Dainotti et al., 2011) to interrupt the online mobilization network and the social processes involved (González-Bailón, Borse-Holthoefer, Rivero, & Moreno, 2011). To gauge the impact of media interruption, I study examples of mass uprisings in which there is a sharp interruption in service and estimate the effects of the change in coverage. As mentioned above, the most visible change that can attest to the validity of the theory is an increase in the dispersion of protests. There are multiple reasons for adopting such a research design. First, media disruption has happened frequently during recent years as a tactic against the new social media's mobilizing capabilities (Howard et al., 2011); hence, multiple cases can be used for the purpose of testing the theory. Second, because of the extent and accuracy of reports, there are very detailed accounts of protests preceding and following breaks in media and mobile communication coverage, which can be used to verify the dispersion hypothesis. In this study of the Egyptian uprising of 2011, I present a showcase for such a design, but before doing so I include some archival evidence suggesting that the same process may have been at work in other historical occasions as well.

Historical Precedents

One of the more interesting facts about the French Revolution is the prevalence of pamphleteering immediately before the revolution (Popkin, 1990). While the established periodicals of the time (e.g., *Gazette de France* and *Gazette de Leyde*) mostly ignored the rebellion during the summer of 1789, many of the leaders of the Third Estate (and later revolutionary leaders during the struggle of summer 1789) published pamphlets to disseminate news and make their own take on the situation known to the public. At the beginning of summer 1789, Louis XVI tried his best to block the growth of pamphleteering (Popkin, 1990) but did not succeed. Later pamphleteers such as Mirabeau and Abbe Sieyès led the revolution. After victory, the revolution redefined the relation between the state and media; pamphleteering was discouraged. Instead, the printed press with wider circulation replaced grass-roots means of written communication and reporting.

Prior to the culmination of the February 1917 unrest in Petrograd, the city's newspapers stopped circulation immediately before the Duma's dissolution on the 27th. They resumed on the first of March. Afterwards the Duma tried to maintain a monopoly on the press (Hasegawa, 1981; Wade, 2005).Wade (2005) believes the confusion caused by the absence of printed media hastened the collapse of the Tsarist regime.[11]

Similarly during the Iranian revolution of 1978–1979, the printed press stopped circulation on November 6, 1978, and did not return to normality until 2 months later. The largest protests of the Iranian revolution happened during the same period, when media coverage was at minimal levels and the scant broadcast of the state media was widely disregarded in favor of pamphlets, audio-cassettes, and foreign radio stations (Kurzman, 2004;

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Rasler, 1996). Again in this case the spread of grass-roots rumors had a major impact on the success of the revolutionary mobilization. Instead of the state setting the general political agenda across the society, the opposition encouraged repetitive cycles of rebellion.

In both of the above cases, the existing evidence is archival. In comparison, the Egyptian uprising of 2011 was extensively reported on, giving an opportunity to follow the spatial dynamics of protests over time. The dispersion hypothesis is most effectively tested when all mobile and Internet communications are cut overnight. That's exactly what Mubarak's regime did in the early hours of January 28, 2011.

Mubarak's Experimentation With Media Disruption

In response to the opposition staging demonstrations for 3 consecutive days in Tahrir Square and promising a yet larger one on a "Friday of Rage," Mubarak's regime shut down Internet and cell phone coverage across the country in the early hours of January 28, 2011. Instead of stalling demonstrations in Tahrir, the events of the next day caught the regime by surprise. Protests flared across Cairo and other Egyptian cities including Alexandria and Suez (El-Ghobashy, 2011). The protests were unusually diffuse and widespread and overwhelmed Mubarak's security forces by the end of the day (Mackey, 2011). Around 7 p.m. on January 28, the military was brought to the scene to replace the dysfunctional police force. After deployment of the military, the dynamics of the interaction among the political players (the incumbent, the military, and the opposition) changed. The military's inaction, accompanied with the unexpected implications of the regime's bold experimentation with the mass media in the following days, put an end to Mubarak's 30-year rule. At the turning point of January 28, lack of cell phone coverage and Internet connections forced the population to find other means of communication, encouraging local mobilization. Meanwhile apolitical strata of the Egyptian society, aggrieved by the disruption, were pushed into joining the confrontation. Instead of protests only in and around Tahrir Square, sizable demonstrations appeared in many locations in Cairo (Shehata, El-Hamalawy, & Lynch, 2011).

El-Ghobashy (2011) and Beinin (2011) both note the importance of online mobilization and take the Egyptian uprising to be the result of a longstanding contentious process fueled by economic hurdles and flagrant abuses of individual freedoms. However, January 28 is seen as a "tipping point" (Beinin, 2011). El-Ghobashy (2011) documents the details of police activities between the 25th and the 28th of January and clashes that resulted in the capitulation of the police force by the end of Friday the 28th. The diffusion of the protests is cited as a major contributor to the opposition's victory (El-Ghobashy, 2011). In the following, I will show that the blanket disruption of media on the 28th had a role in diffusing the protests.

As mentioned above, the Egyptian case offers a unique opportunity to test the plausibility of the dispersion hypothesis in a quasi-experiment (alas run by Mubarak's regime). The disruption was abrupt, and its timing (around 1:30 a.m. on January 28) ruled out any preparation for countering the blackout on the previous day. Between 10 p.m. and 2 a.m., SMS and Internet communications were shut down; more importantly, cell phone communications were interrupted and remained dysfunctional on the 28th (for a detailed timeline of the disruptions, see Table 3; Dunn, 2011b; Cowie, 2011; Raoof, 2011). While the regime had experimented with selectively disrupting network coverage and Web sites such as Twitter and Facebook, it was the first time a *universal* communication blackout was imposed on the nation.

Dismantling regular venues for communication incited Egyptians to find new ways of staying online or forgoing online communication altogether. On the 25th, the presence of

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

social media and mobile communications had helped the protesters to converge to Tahrir Square (see Figure 4 for a snapshot of a mass email sent out for mobilization by the April 6 Youth Movement). On the other hand, the lack of communication on the fly on the 28th stalled global convergence to Tahrir. Many local focal points instead absorbed the crowds who did not know about the developments around Tahrir. During the social media hiatus, older mobilization tactics were used in conjunction with new means of mass communication. For example, after the 28th, satellite television stations such as Al Jazeera broadcast the news that was communicated to them via landline phones (Shehata et al., 2011). Al-Arabiya also started broadcasting informative tweets on the radio. At the same time, tweeting over the phone became a possibility using Google's Speak2Tweet (Dunn, 2011a). In addition to these spontaneous innovations, the protests proliferated through much more mundane means. On the 28th, those worried about their friends and family members participating in protests could not reach them via cell phones, and had to join the crowds in the streets to find out about their acquaintances (Shehata et al., 2011). In the hazardous conditions of the ongoing standoff across the city, focal points on the local level became gathering locations. Many congregated in local squares, strategic buildings, and mosques instead of trying to reach Tahrir (Mackey, 2011). Radicals became more effective on the local level, because they could directly contact more people on the ground. Moreover, the networks underlying collective action and news propagation became smaller and more diffuse, making it more difficult for the regime to contain the protests.

To summarize, the disruption of cell phone coverage and Internet on the 28th contributed to exacerbation of the unrest in at least three major ways: It implicated many apolitical citizens unaware of or uninterested in the unrest; it forced more face-to-face communication (i.e., more physical presence in the streets); and finally it effectively decentralized the rebellion on the 28th through new hybrid communication tactics, producing a quagmire much harder to control and repress than one massive gathering in Tahrir.[12]

Protest Dispersion in Cairo and Media Disruption: An Interrupted Time Series Strategy

An interrupted time series strategy is used to test the validity of the dispersion hypothesis in the context of the Egyptian uprising of 2011. Cairo is chosen for the empirical study because the Egyptian capital and Tahrir Square in downtown Cairo were central to the developments leading to Mubarak's ouster. The military's deployment in Cairo and around Tahrir on the 28th and its ambivalent reaction to the protests effectively diminished the prospects of the regime.

In the following, I first present data on protest dispersion and media disruption during the 18 days of the Egyptian unrest. Then I outline the identification strategy using a few controls and *media disruption* as a treatment in the context of two sets of regressions. Finally, I examine a number of confounding elements.

Description of Variables. I include four variables in the ordinary least squares regressions used for the identification of the effect of media disruption on protest dispersion.

The dependent variable is protest dispersion, defined as the number of locations in Cairo where protests were happening each day. The details on protest locations are included in Table 2. In the reconstruction of the events, and for identifying the location of the protests, I used graphic designs from the *New York Times* in addition to the accounts from the Lede blog.[13] Note that protests are often diffuse and ephemeral. Neither a single observer nor a team of reporters can capture the whole picture in every corner of a city.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Table 2
Protest location details

Date	Dispersion: Protest location
January 25	1: Tahrir
January 26	1: Tahrir
January 27	1: Tahrir
January 28 (Friday)	8: Tahrir–NDP headquarters–Egyptian National Museum/Kasr al-Nil Bridge/6 October Bridge/TV headquarters/Al Azhar mosque/Mohandeseen/Mustafa Mahmoud Mosque/Istiqama Mosque
January 29	4: Tahrir–NDP headquarters–Egyptian National Museum/Interior Ministry/Corniche al-Nil/Abu Zaabal
January 30	3: Tahrir/Heliopolis/Abu Zaabal
January 31	3: Tahrir/Mohandeseen/Arkadia Shopping Center
February 1	2: Tahrir/Kasr al-Nil Bridge
February 2	3: Tahrir–Egyptian National Museum/Mohandeseen/Corniche al-Nil
February 3	1: Tahrir–Egyptian National Museum
February 4 (Friday)	1: Tahrir–Egyptian National Museum
February 5	1: Tahrir–Egyptian National Museum
February 6	1: Tahrir–Egyptian National Museum
February 7	1: Tahrir–Mugamma
February 8	2: Tahrir/Egyptian Parliament
February 9	4: Tahrir/Zamalek/Ministry of Health-Egyptian Parliament/Dokki (organized labor protests)
February 10	4: Tahrir/TV headquarters/Egyptian Parliament/Abdin Palace
February 11 Friday	5: Tahrir/TV headquarters/presidential palace/Mustafa Mahmoud Mosque/Egyptian Parliament

Sources: Bloch et al. (2011); Mackey (2011).

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

In such a situation, a steady reporting style and a fixed number of reporters ensure a uniform *sampling* of the unrest across the city. Because the parameter of interest is the increase or decrease in the dispersion of protests and the absolute value of dispersion is not central to the analysis, as long as the number of reporters and their distribution across the unit of study (i.e., the city of Cairo) is constant and uniform during the course of the unrest, the differences in dispersion are efficiently captured using reports from the same team. However, it is plausible to assume that the numbers and the distribution of reporters are correlated with the level of unrest; more coverage is expected when the protests endure and spread. Nevertheless, Friday the 28th was the beginning of the universal unrest in Egypt (El-Ghobashy, 2011; Shehata et al., 2011), 3 days after the beginning of the movement. Hence, it is unlikely for the mechanism for reporting on the dispersion measure on the 28th to be drastically different from the days immediately before or after the 28th.

The size of the variable set used in the study is 18, equivalent to the number of days in the standoff, which lasted from January 25 to February 11. In the coding of the locations, as can be seen in Table 2, I paid attention to the spatial proximity of the locations listed in the reports. For example, I coded NDP headquarters, the Egyptian National Museum,

Table 3
Disruption timeline

Date	Type of disruption or restoration
January 25	Twitter.com blocked
	Bambuser.com (live video streaming) blocked at 2 p.m.
	Activists' mobile lines shut down
	Network coverage shut down in Tahrir
January 26	Facebook.com blocked
	Blackberry services shut down at 7 p.m.
January 27	SMS shut down at 10 p.m.
January 28	Internet shut down, except one ISP, at 1:30 a.m.
	Mobile phone calls shut down for 1 day
	Landlines shut down in some areas
January 30	Al-jazeera Cairo bureau shut down
January 31	Last ISP shut down
February 1	State media campaign against protesters (text messages)
February 2	Internet service restored at 12:30 p.m.
February 5	SMS restored at 12:35 a.m.

Sources: Cowie (2011); Dunn (2011b); Raoof (2011).

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

and Tahrir Square as one location, as the crowds in these places were often contiguous. Maximum dispersion from the *Times*'s reports is eight major locations, while sometimes the only major gathering was reported from Tahrir.

Independent variables include a dummy for the treatment (i.e., media disruption) and a number of controls. A log of state interruptions of media and cell coverage is included in Table 3. For coding media disruption, I have used online information from Egyptian bloggers (Cowie, 2011; Dunn, 2011b; Raoof, 2011) and coded the data after cross checks with Al Jazeera. It is important to note that while the regime was experimenting with cursory blockages of social media Web sites, the major and far-reaching disruptions in the SMS system, the Internet, and mobile communications did not happen until the late hours of January 27 and early on the 28. The most acute phase of operations was less than 4 hours, from 10 p.m. January 27 to 1:30 p.m. on January 28. Later when I present the results, I outline the procedure for coding the disruption dummies as the treatments in the design.

In Figure 3, the disruption of Internet coverage is depicted vis-a-vis the dispersion of the protests. The dispersion rates were clearly high when the disruption was effective, between early on January 28 and midday of February 2.

A control dummy for Fridays (January 28 and February 4) is also included. Controlling for Fridays is necessary because Friday is the Muslim weekly holiday, in which more people have the time and latitude for demonstration. Friday prayers can also act as focal events. The second control is a tally of national announcements (detailed in the appendix). Announcements are included as a control for the influence of mainstream media. Whenever there is a national address by the heads of the Egyptian state or the opposition, the control dummy is coded as one. Based on the appendix, there were six addresses during the 18 days.

Results. In the following, there are two classes of treatment applied. In the first, disruption is coded as a dummy on the 28th, and the dependent variable is the daily change in dispersion.

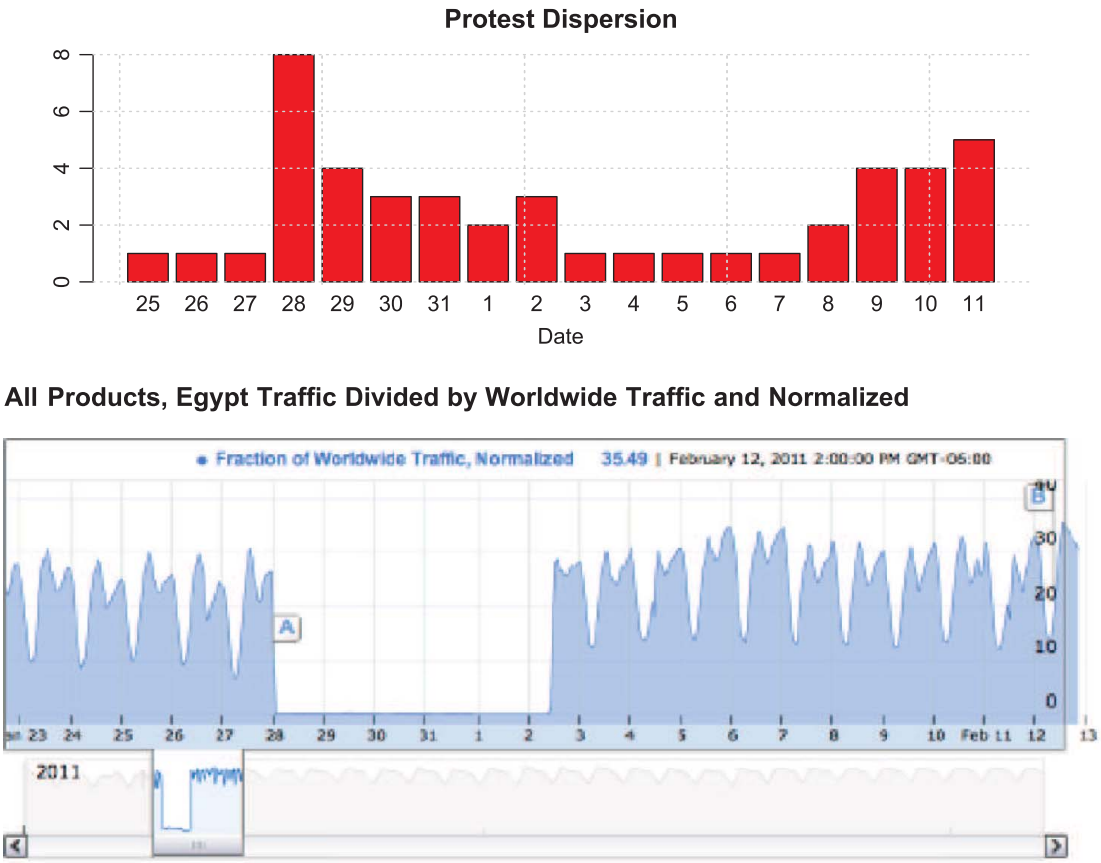

Figure 3. Top: protest dispersion (number of distinct protest locations according to Table 2). Bottom: all Google products, Egypt traffic (from Google Transparency Report, 2011) (color figure available online).

In the second design, disruption is coded over the 5-day span of January 28 to February 1, and the dependent variable is the dispersion itself.

January 28 was the first day of blanket disruption and the only day on which cell phone communications, Internet services, SMS, and occasionally landlines were unavailable (see Table 3). Lack of cell phone coverage is more far reaching among the population than the absence of the Internet. In January 2011, there were 23.51 million Internet users compared to 71.46 million mobile subscribers (Egyptian Ministry of Communications and Information Technology, 2011). Hence, compared to Internet outage, any disruption in mobile communications directly implicates a much larger portion of the Egyptian population. Also, mobile phones are more effective means of communication on the fly during protests in the streets. On the other hand, Internet disruption complicates longer term planning and organization. Cutting cell coverage has an immediate impact on personal communication in the streets. Considering these issues and the fact that dismantling the Egyptian online network came as a surprise during the very first day of the outage, I code the treatment (Disruption1) as a dummy (1 on the 28th and 0 otherwise). Later I consider an extended version of the disruption variable.

The regression model in Equation 1 gauges the effect of the treatment (media disruption) on daily differences in protest dispersion in Cairo, $\Delta\text{Dispersion}(t) = \text{Disruption}(t) - \text{Disruption}(t-1)$, controlling for Fridays and major media announcements. The dependent variable's being a daily difference in dispersion helps in mitigating the influence of background conditions that are fixed during the events.

$$\Delta\text{Dispersion}(t) = a + b_1\text{Disruption}(t) + b_2\text{Friday}(t) + b_3\text{Announcement}(t) + \varepsilon. \quad (1)$$

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Fwd: إعلان: اماكن التظاهرات ونقاط التحرك ليوم 25 يناير بالقاهرة والمحافظات

---------- Forwarded message ----------
From: **April 6 Youth** <media@6april.org>
Date: 2011/1/22
Subject: إعلان: اماكن التظاهرات ونقاط التحرك ليوم 25 يناير بالقاهرة والمحافظات
To:

أعلنت حركة شباب 6 ابريل الأماكن والنقاط التي من المفترض بدأ مظاهرات 25 يناير منها بعد التنسيق مع المجموعات الشبابية داخل مصر وخارجها.

ومن المفترض أن تبدأ التظاهرات في القاهرة والمحافظات في تمام الساعة 2 ظهرا

ومن المفترض أن يشارك بجوار القوي الشبابية المصرية والحشد من المواطنين المصريين، كل من الألتراس الأهلاوي والألتراس الزملكاوي وطلاب من جامعات مصرية خاصة، وعمال مصنع الغزل والنسيج بالمحلة وموظفي مراكز المعلومات "حسب الإعلان حتي الأن"

كذلك سوف تنطلق تحركات أخري لكل من الأطباء والمحامين والمهندسين وأساتذه الجامعات والمعلمين

أماكن التجمعات في القاهرة :
شارع جامعة الدول العربية (المهندسين) *
دوران شبرا *
ميدان المطرية*
جامعة القاهرة*

أما المحافظات المشاركة
1-القهليه "المنصوره"
2-الاسكندريه
3-الغربيه في المحله الكبير
4-السويس
5-الاسماعليه
6-كفر الشيخ
7-اسيوط
8-بورسعيد
9-دمياط

ومن المفترض أن ينضم المتظاهرون من الشرقية والقليوبية والمنوفية إلي المتظاهرين في القاهرة وكذلك سينضم المتظاهرين في قنا وسوهاج والمنيا إلي المتظاهرين في أسيوط

. ومن المفترض أن يكون هناك تحرك واسع من أهالي سيناء للمشاركة في يوم 25 يناير بشكل واسع

المطالبة والشعارات الخاصة بيوم 25 يناير:
1- حد أدني للأجور 1200 جنية
2- ربط الأجور بالأسعار
3 إلغا الة الط ا

Figure 4. A snapshot of the e-mail sent out by the April 6 Youth Movement calling for protests on January 25. Note that of the initial protest locations, there are only four listed destinations in Cairo: Mohandeseen, Shubra, Matariya Square, and the University of Cairo. Eventually all converged to Tahrir Square. These locations match the description of protest locations on the 25th from El-Ghobashy (2011).

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Table 4
Protest dispersion in Cairo: OLS of dispersion over treatment (disruption dummy on the 28th and zero otherwise), controlling for Fridays and announcements

	Estimate	*SE*	*t* value	Pr (> |*t*|)
Intercept	−0.08333	0.40886	−0.204	0.84143
Disruption1	5.91667	1.96080	3.017	0.00923*
Friday	1.16667	1.29291	0.902	0.38213
Announcement	−0.58333	0.91423	−0.638	0.53373

Note. Residual standard error: 1.416 on 14 *df*; multiple R^2: .6382, adjusted R^2: .5606; *F*-statistic: 8.23 on 3 and 14 *df*, $p = .002109$.
* $p < .01$.

Table 5
Protest dispersion in Cairo: OLS of dispersion over treatment (disruption dummies on the 28th to the 1st, [3 1 1 1 1] and zero otherwise), controlling for Fridays and announcements

	Estimate	SE	*t* value	Pr (> |*t*|)
Intercept	1.2845	0.3980	3.227	0.006083*
Disruption2	1.8223	0.4328	4.210	0.000873**
Friday	0.6526	0.9048	0.721	0.482635
Announcement	1.3610	0.6818	1.996	0.065752

Note. Residual standard error: 1.205 on 14 *df*; multiple R^2: .6746, adjusted R^2: .6049; *F* statistic: 9.676 on 3 and 14 *df*, $p = .001025$.
* $p < .01$; ** $p < .001$.

Results are included in Table 4. According to the coefficients, the disruption on the 28th accounts for approximately 75% of the dispersion. This is an effect that is highly significant against the null hypothesis. None of the controls are either comparable or statistically significant.[14]

In addition to the regression results based on daily changes in protest dispersion included in Table 4, I also code the disruption across the period of the 28th to the 1st. Taking the relative penetration of mobile devices to the Internet into account, I implement the treatment vector (3 1 1 1 1). Even with the new coding, the impact of the disruption on protest dispersion is large and statistically significant. In this case, the dependent variable is the dispersion itself, not the daily differences.

$$\text{Dispersion}(t) = a + b_1\text{Disruption2}(t) + b_2\text{Friday}(t) + b_3\text{Announcement}(t) + \varepsilon. \quad (2)$$

The results are included in Table 5 for comparison. Note the positive, large, and statistically significant impact of social media and mobile communication disruption. The disruption treatment still accounts for around 70% of the dispersion.

Finally, to account for the correlation between successive time units in the time series analysis (Hibbs, 1974), I included the dispersion differences at the previous time, that is, $\Delta\text{Disruption}(t-1)$, as an independent variable in the following regression. The results are included in Table 6 for comparison. The effect of the change in dispersion in the previous day is small and is not statistically significant. The equation is as follows:

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Table 6
Protest dispersion in Cairo: OLS of dispersion over dispersion on the previous day and treatment (disruption dummy on the 28th and zero otherwise), controlling for Fridays and announcements

	Estimate	SE	*t* value	Pr (> |*t*|)
Intercept	−0.08333	0.37411	−0.223	0.82719
ΔDispersion ($t-1$)	−0.31250	0.16199	−1.929	0.07584
Disruption1	6.85417	1.85882	3.687	0.00274*
Friday	0.22917	1.27896	0.179	0.86056
Announcement	0.04167	0.89708	0.046	0.96366

Note. Residual standard error: 1.296 on 13 *df*; multiple R^2: .7187; adjusted R^2: .6321; *F* statistic: 8.303 on 4 and 13 *df*, $p = .001491$.
*$p < .01$.

$$\Delta\text{Dispersion}(t) = a + b_0\Delta\text{Disruption}(t-1) + b_1\text{Disruption1}(t) + b_2\text{Friday}(t) + b_3\text{Announcement}(t) + \varepsilon. \quad (3)$$

Discussion. There are three issues that need to be addressed for the above identification to be plausible; two are related to confounding factors, and one addresses the endogeneity issue.

The two confounding factors are Fridays and police barricades on the 28th. Friday prayers can confound the media disruption treatment. On Friday the 28th, mosques acted as local gathering points. Nevertheless, note that without the population's *prior* decision to engage in protests and to congregate in their neighborhoods, Friday prayers could not account for participation levels and the dispersion seen on the 28th. Protesters did not take part in public demonstrations because they were all outside for Friday prayers and then they decided to protest. Their decision on exiting their dwellings was prior to their congregation in local focal points. On the 28th, many were motivated by a heightened sense of urgency and were compelled by the urge to seek news after the media blackout. Similar increases in dispersion did not happen on the following Fridays, February 4 and 11. The Friday variable is not statistically significant in Table 4 or 5.

The police also tried to block the passages to Tahrir on adjacent bridges on the Nile. For example, clashes on the Kasr al-Nil and 6 October bridges were well documented. However, even after accounting for police activities (i.e., taking the clashes on the aforementioned two bridges to be parts of an extended protest in Tahrir), similar results hold. Changing the dispersion on the 28th from 8 to 6 does not drastically change the results in Tables 4 and 5. On the 25th, police operations to block the passage to Tahrir were similar to the 28th (El-Ghobashy, 2011); however, as mentioned above, the ubiquitous presence of the population in streets was the decisive factor that overwhelmed the police.

Regarding the endogeneity concerns—that the government disrupted the media in anticipation of a major increase in the size and dispersion of the protests, or that the closing down of the media was simply a by-product of the escalating unrest—the major prediction of the model (i.e. sharp increase in the dispersion of the protests) should be shown to be manifest and statistically significant in relation to the treatment even after controlling for other confounding factors.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

If the increasing dispersion was only a result of the deteriorating power of the incumbent, similar outcomes should have occurred in the days following the disruption when the incumbent was progressively becoming weaker; that is, proliferation should have continued, because similar contextual conditions existed immediately after the 28th. However, such a sharp proliferation never happened again during the course of the protests, in spite of media restoration and the enduring contention in Tahrir, even when the numbers in Tahrir were unprecedented and upon the return of the Internet on February 2.

In relation to the endogeneity issue, reverse causality needs to be addressed: It is plausible to assume that the regime had sensed rising tensions and decided to disrupt media to preempt the opposition; however, it is important to note that the primary parameter of interest here is the dispersion of the protests, not solely their size or severity. It is unlikely that the regime disrupted the Internet and mobile communications in anticipation of merely an increase in the dispersion of the protests. The size and dispersion of the protests are not directly correlated. As can be seen in the results of the survey below, the size of the protests grew as they became more concentrated in Tahrir Square. Mubarak's regime's response to the growing threat of protests was not directed at their dispersion per se.

An illuminating exposition is a comparison between mobilization on January 25 and 28. Prior to both days, protests were anticipated and mobilization campaigns were underway. In one, the 25th, mobile and Internet communications were in place, while in the other, the 28th, both media were disrupted. A study of e-mail communications prior to the 25th shows that during the protests of the 25th, BlackBerry messaging, texting, and mobile communication played a major role in directing the crowds from these locations to a central focus of attention as globally visible as Tahrir Square (see the mobilization e-mail in Figure 4). The regime's disruption of the media in the early hours of January 28, effectively prevented such a convergence mechanism and contributed to the decentralization of the demonstrations, making them much harder to control.

In the following, I present the results of an online survey on the levels of participation in protests in Cairo during four phases of the 18-day Egyptian uprising. The results show an increase in the dispersion of the protests after the shutdown of media and mobile communication in Cairo.

Media Usage and Protest Location Survey

To complement the data collected from journalistic and online sources, I conducted an online survey among the residents of Cairo between April and June 2012, asking them about their participation in (a) protests in general and (b) protests in Tahrir. I asked the same pair of questions for four time periods during the 18-day Egyptian uprising: January 25–27 (before the disruption of online media and mobile communications), January 28 (full media disruption), January 29–February 1 (cell coverage but no Internet),[15] and February 3–11 (online and mobile media restored). By parsing the four phases using memorable moments of the Egyptian uprising (e.g., before full media disruption, on the first day of disruption, after restoration of cell coverage without the Internet, and after full restoration), I strived to counter the problem of perfect recall. I had a total of 385 respondents and 255 fully finished surveys. From these 255 respondents, 15 were excluded because they were not from Cairo proper. Hence, 240 were included in the analysis. The results of the part of the survey pertinent to the study of protest dispersion are included in Table 7 and Figures 5 and 6.

Figure 5 shows that although the participation levels sharply increased on the first day of media disruption, the percentage of the protesters who went to Tahrir decreased. In line

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Table 7
Protest locations according to the survey, all numbers are in percents. (See Figure 5 for a pictorial depiction of the data.)

	25–27	28	29–01	03–11
Protest	35.0	50.4	51.7	66.3
(confidence interval)	(3.1)	(3.2)	(3.2)	(3.1)
Protest in Tahrir	29.4	26.7	42.8	64.6
(confidence interval)	(3.3)	(2.9)	(3.6)	(3.1)

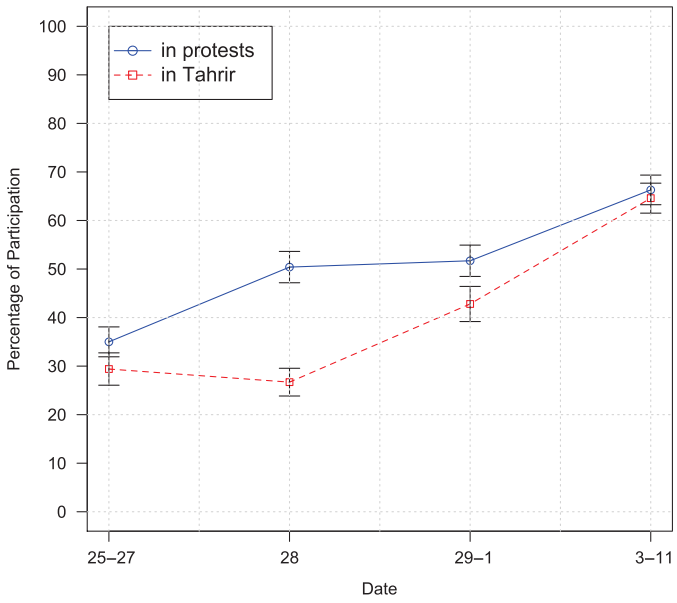

Figure 5. Participation in protests in Cairo and in Tahrir specifically. Among the four phases, Tahrir was the least focal on the 28th (color figure available online).

with the location data from the study, Figure 6 confirms that the percentage of protesters demonstrating outside Tahrir and across Cairo was the greatest on the 28th.

Figures 7 and 8 show the same dynamics for the *radicals*, defined as those who participated in the first phase of the protests on January 25–27. A similar comparison among those who proclaimed participation on January 25–27 shows that their presence in Tahrir sharply fell on the 28th. On the other hand, the percentage of those present across the city outside of Tahrir increased on the same day.[16]

Conclusion

In the above, I showed that the favorable portrayal of social media in fostering unrest in the context of heterogeneous networks should be qualified. In other words, in the presence of a risk-averse majority and a radical minority, adding more links among the majority does not necessarily help mobilization. In the absence of centralized media, crowds' risk-taking behavior becomes independent of the state's intentions. Note that even the most authoritarian regimes prefer not to systematically bomb their own population; they instead use a threat of forceful military action in order to deter. When it is impossible to communicate the

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

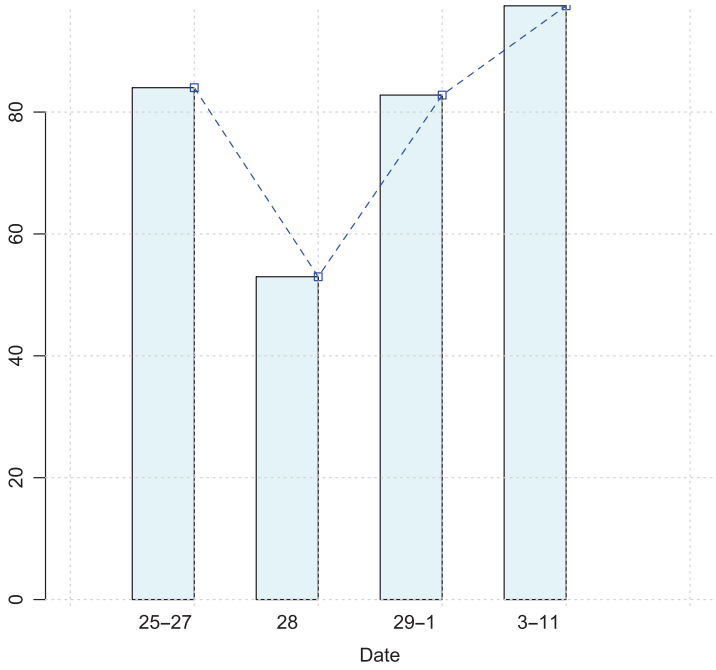

Figure 6. Participation percentage in Tahrir among all protesters. It sharply fell on the 28th (color figure available online).

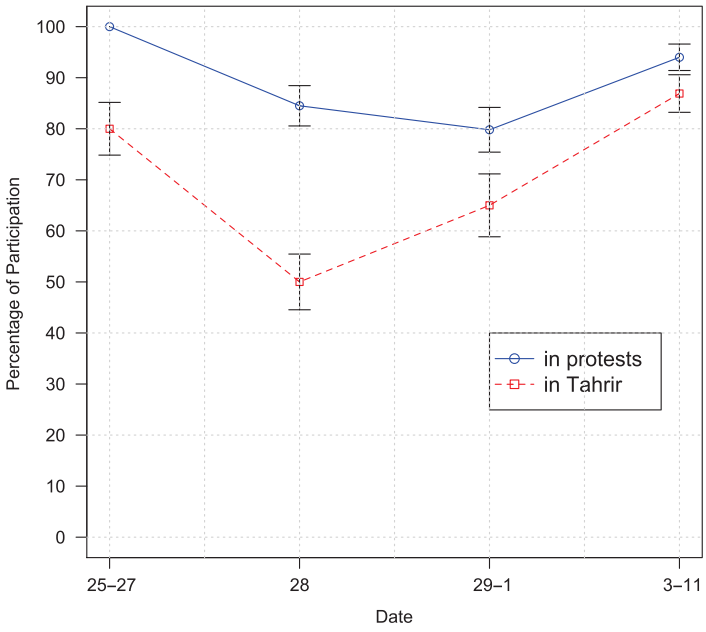

Figure 7. Participation in protests in Cairo and in Tahrir specifically among "radical" defined as those who participated in the initial phase of protests on January 25–27 (color figure available online).

possibility of a painful military retaliation, the state is unable to dissuade the crowds. In fact, protests proliferate when such threatening measures fail. In reaction to a shock similar to the one exerted on the Egyptian society on January 28, the population can overwhelm the incumbent apparatus. The consequences of such an action were tangible in the aftermath of the Egyptian media blockage. The Lede blog reported from Alexandria on January 28 (emphasis added; Mackey, 2011) read as follows:

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

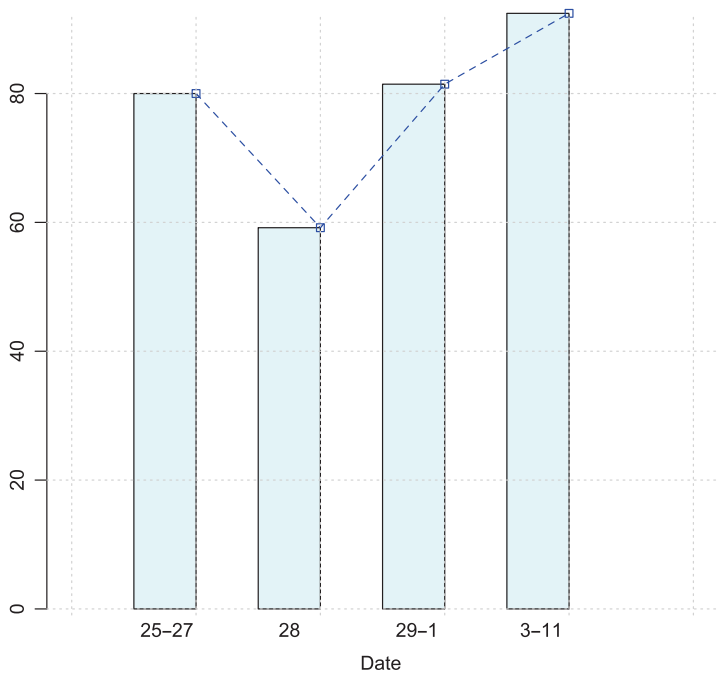

Figure 8. Participation percentage in Tahrir among "radicals." It decreased on the 28th (color figure available online).

> It's clear that the very extensive police force in Egypt is no longer able to control these crowds. *There are too many protests in too many places*. . ., said Peter Bouckaert, emergencies director of Human Rights Watch, who observed the street battle in Alexandria on Friday, [January 28, 2011].

Notes

1. See Kurzman (2004).

2. From the *Historical New York Times* ("Guard Regiments" 1917): "A general meeting of the association of Russian editors has decided against a renewal of the newspapers, with the view of preventing of fantastic rumors which might harm the common cause. Therefore only one newspaper is to be issued twice a day. It is to be distributed free and edited by a committee of Petrograd journalists, whose rooms are in the Duma building."

3. In fact, a number of mass uprisings in the Eastern Block were initiated by rumors the (see next section).

4. I will use this localization process as a proxy to examine the effects of media disruption.

5. Shadmehr and Bernhardt (2011), using a two-agent strategic stylization, also find conditions under which "more" information can make a revolt "less likely."

6. The transformation of the press after the French Revolution points in the same direction: While decentralized pamphleteering was a common practice among the revolutionaries, the state they created moved to standardize and regulate the process (Habermas, 1991).

7. Popkin (1995), among others, notes the positive impacts of the free media on bringing about revolutions.

8. In the above it was identified as the dispersion hypothesis.

9. Also, while the threshold perceptions are changing indefinitely (although converging), the actions might reach the steady state and remain the same. Here the private preferences are changing while the actions remain the same.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

10. For an anecdotal argument in favor of hierarchical organization involving the civil rights movement, see Gladwell (2010).

11. It is necessary to mention that literacy rates among the urban Russian population around 1917 were approximately 70% (Mironov, 1991); that is, the printed press as the sole formal news propagation mechanism (prior to television and radio broadcast) played a major role in everyday news learning. Their absence acted as a catalyst for the revolutionary unrest in Petrograd.

12. Even in Tahrir, there was no single leadership (Shehata et al., 2011): "Nobody was in charge of Tahrir," and "a lot of those who joined the protests on January 25th in Tahrir were not aware of the Facebook campaign, they had heard about it from the protesters in the square and surrounding streets." According to Mourtada and Salem (2011), a majority of respondents to an online survey on the role of media disruption on the protests, run shortly after the end of the 18-day uprising, believed it had a positive effect on the demonstrations.

13. See Bloch et al. (2011) for a dynamic view of protest proliferation through the 18 days of the unrest.

14. Similar results are obtained when the variable "announcement" is excluded.

15. February 2 was dropped to allow for a full separation between the pre-and post-media restoration phases around February 2.

16. For a detailed analysis of the survey, see Hassanpour (2013).

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

References

Beinin, J. (2011). *Egypt at the tipping point?*, Retrieved from http://bit.ly/PwpFOq

Bilefski, D. (2009, November 17). Celebrating revolution with roots in a rumor. *Historical New York Times*, p. A16.

Bloch, M., Carter, S., Schoenfield, A., He, E., Pecanha, S., Tse, A., and G.V., X. (2011, February). Mapping the protests in Cairo, day by day. *Historical New York Times*. Retrieved from http://goo.gl/aogbS

Centola, D., Eguiluz, V. M., & Macy, M. W. (2007). Cascade dynamics of complex propagation. *Physica A*, *374*, 449–456.

Chwe, M. (1999). Structure and strategy in collective action. *American Journal of Sociology*, *105*, 128–156.

Chwe, M. S. (2001). *Rational ritual, culture, coordination, and common knowledge*. Princeton, NJ: Princeton University Press.

Coker, M., & Levinson, C. (2011, April 13). Rebels hijack Gadhafi's phone network. *Wall Street Journal*. Retrieved from http://goo.gl/tDDSLs

Cowie, J. (2011, January). Egypt leaves the Internet. *Renesys Blog*. Retrieved from http://www.renesys.com/2011/01/egypt-leaves-the-internet/

Dainotti, A., Squarcella, C., Aben, E., Claffy, K. C., Chiesa, M., Russo, M. & Pescapé, A. (2011). Analysis of country-wide Internet outages caused by censorship. In *Proceedings of the 2011 ACM SIGCOMM Conference on Internet Measurement* (pp. 1–18). New York, NY: ACM.

Dunn, A. (2011a). *How the Internet kill switch didn't kill Egypt's protests*. Retrieved from http://bit.ly/gAeqbu

Dunn, A. (2011b). Unplugging a nation: State media strategy during Egypt's January 25 uprising. *Fletcher Forum of World Affairs*, *35*, 15–24.

Egyptian Ministry of Communications and Information Technology. (2011, February). ICT indicators in brief. *ArabCrunch*. Retrieved from http://goo.gl/bHszTs

El-Ghobashy, M. (2011). *The praxis of the Egyptian revolution*. Retrieved from. http://bit.ly/fpoIJL

Gladwell, M. (2010). *Small change, why the revolution will not be tweeted*. Retrieved from. http://nyr.kr/bYKeLq

Guard regiments started uprising. (1917, March 17). *Historical New York Times*, p. 2.

González-Bailón, S., Borge-Holthoefer, J., Rivero, A., & Moreno, Y. (2011). *The dynamics of protest recruitment through an online network*. Retrieved from http://bit.ly/KtxZsM

Google Transparency Report. (2011). Retrieved from http://bit.ly/h3Q1FZ

Gould, R. V. (1993). Collective action and network structure. *American Sociological Review*, *58*, 182–196.

Granovetter, M. S. (1978). Threshold models of collective behavior. *American Journal of Sociology*, *83*, 1420–1443.

Habermas, J. (1991). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society*. Cambridge, MA: MIT Press.

Hasegawa, T. (1981). *The February revolution: Petrograd, 1917*. Seattle: University of Washington Press.

Hassanpour, N. (2010). Dynamic models of mobilization in political networks. In *Proceedings of the 2010 Political Networks Conference,* Paper 43. Durham, NC: Duke University. Retrieved from http://opensiuc.lib.siu.edu/pnconfs_2010/43

Hassanpour, N. (2013). *Localization of the news and urban unrest: A media usage and protest location survey in Cairo*. Manuscript in preparation.

Hibbs, J. (1974), Problems of statistical estimation and causal inference in time-series regression models. *Sociological Methodology*, *5*, 252–308.

Historical Washington Post. (1978). *The Washington Post*.

Howard, P. N. (2010). *The digital origins of dictatorship and democracy: Information technology and political Islam*. New York, NY: Oxford University Press.

Howard, P. N., Agarwal, S. D. & Hussain, M. M. (2011). When do states disconnect their digital networks? Regime responses to the political uses of social media. *Communication Review*, *14*, 216–232.

Jackson, M. O. (2008). *Social and economic networks*. Princeton, NJ: Princeton University Press.

Kern, H. L. & Hainmueller, J. (2009). Opium for the masses: How foreign media can stabilize authoritarian regimes. *Political Analysis*, *17*, 377–399.

King, G., Pan, J. & Roberts, M. (2013). How censorship in China allows government criticism but silences collective expression. *American Political Science Review*, *107*, 326–343.

Kuran, T. (1989). Sparks and prairie fires: A theory of unanticipated political revolution. *Public Choice*, *61*, 41–74.

Kuran, T. (1991). Now out of never, the elements of surprise in the East European revolution of 1989. *World Politics*, *44*, 7–48.

Kurzman, C. (2004). *The unthinkable revolution in Iran*. Cambridge, MA: Harvard University Press.

Lohmann, S. (1994). The dynamics of informational cascades: The Monday demonstrations in Leipzig, East Germany, 1989–91. *World Politics*, *47*, 42–101.

Mackey, R. (2011, January 28). Updates on Friday's protests in Egypt. *New York Times' Lede Blog.* Retrived from http://goo.gl/wph S4D

Mironov, B. N. (1991). The development of literacy in Russia and the USSR from the tenth to the twentieth centuries. *History of Education Quarterly*, *31*, 229–252.

Morozov, E. (2011). *The net delusion: The dark side of Internet freedom*. New York, NY: Public Affairs.

Mourtada, R., & Salem, F. (2011). *Arab social media report, civil movements: The impact of Facebook and Twitter*. Retrieved from http://www.arabsocialmediareport.com/

Popkin, J. D. (1990). *Revolutionary news: The press in France 1789–1799*. Durham, NC: Duke University Press.

Popkin, J. D. (1995). *Media and revolution, comparative perspectives*. Lexington: University Press of Kentucky.

Raoof, R. (2011, February). Egypt: Sequence of communication shutdown during 2011 uprising. *Global Voices Advocacy 9*. Retrieved from http://goo.gl/Dx0Fe

Rasler, K. (1996). Concessions, repression, and political protest in the Iranian revolution. *American Sociological Review*, *61*, 132–152.

Sarotte, M. E. (2009, November 17). How an accident caused the Berlin Wall to come down. *Historical Washington Post*.

Schelling, T. C. (1978). *Micromotives and macrobehavior*. New York, NY: Norton.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin.
Shadmehr, M., & Bernhardt, D. (2011). Collective action with uncertain payoffs: Coordination, public signals, and punishment dilemmas. *American Political Science Review*, *105*, 829–851.
Shehata, D., El-Hamalawy, H., & Lynch, M. (2011). *Youth movements and social media: Their role and impact*. Retrieved from http://bit.ly/pOy1QJ
Shirky, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York, NY: Penguin Books.
Siegel, D. A. (2009). Social networks and collective action. *American Journal of Political Science*, *53*, 122–138.
Stein, E. (2008). *Leading the way: The media and the struggle against authoritarian rule*. PhD Dissertation, University of California, Los Angeles.
Wade, R. A. (2005). *The Russian revolution, 1917*. New York, NY: Cambridge University Press.
Zaller, J. R. (1992). *The nature and origins of mass opinion*. New York, NY: Cambridge University Press.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015

Appendix: Event Data, Egyptian Uprising of 2011

Included here are data on the details of the 18 days of confrontation between Egyptian protesters and Mubarak's regime and a list of major political announcements by the Egyptian and American leaders. The data are extracted from the *New York Times'* Lede blog and Al Jazeera's Web site.

Cycles of Unrest

Four important cycles of unrest are evident during the 18 days of the Egyptian uprising, each of which starts with a significant media event. There are four: January 25–27, January 28–February 1, February 2–7, and February 8–11.

1. *January 25-27*: Initial mobilization on January 25, the social media campaign.
2. *January 28–February 1*: Disruption of the media on January 28 and the proliferation of the protests; the military steps in and acts as a game changer during the following clashes between pro-and anti-Mubarak crowds.
3. *February 2–7*: Provocative national address by Mubarak late at night on February 1 (stating he will stay in power until September and will die in Egypt), ensuing clashes on the 2nd and 3rd; the military's inaction emboldens prevailing opposition crowds, relative calm afterwards until the 8th.
4. *February 8–11*: Emotional appeal by Wael Ghonim on a late-night television show on the 7th and his follow-up speech in Tahrir Square on the morning of February 8 initiate the final phase of protests in Tahrir; eventual announcement of Mubarak's resignation by Suleiman on the 11th.

Political Announcements

A list of major announcements during the Egyptian protests is included below. "Announcements" are major addresses to the nation, broadcast from the state television or private TV channels with a national audience. I have collected the following accounts from the *New York Times's* Lede blog and Al Jazeera's Web site. All times are Egyptian local time (EST+7 in January and February 2011).

1. **January 29**: At around 12:30 a.m., Mubarak's late-night address (coded in the analysis as an announcement on the 29th); he gives concessions, dismisses the government, and appoints a vice president. Obama talks to the press immediately after Mubarak's speech.
2. **February 1**: At around 10 p.m. (earlier that day the largest protest to date occured in Tahrir), Mubarak gives another speech on state television. He announces he intends to remain in office until the end of his current term. Obama again speaks after Mubarak's speech. Worst clashes start on February 2 and last for 2 days (2nd and 3rd of February); by the 5th the situation has almost returned to normal.
3. **February 4**: Suleiman makes TV appearances (total of two television appearances before Friday the 4th).
4. **February 8**: Wael Ghonim gives an emotional interview on Monday night (7th) on a cable TV channel and appears in Tahrir the next morning (8th) to give a speech addressing the massive crowd in the square.
5. **February 10**: Around 7 p.m., Egyptian state TV announces an address by Mubarak to be broadcast soon; Obama gives a speech around 8:30 p.m. ("Egyptians are making history"). Around 10 p.m., Mubarak gives a speech on state television asserting that he is not stepping down and will remain in office until September.
6. **February 11**: Around 6 p.m., Suleiman gives an address on state TV announcing that "President Hosni Mubarak has resigned and handed over power to the country's military." Obama gives a speech at 10 p.m.

Downloaded by [Temple University Libraries] at 09:31 07 January 2015