Cyber Politics: Understanding the Use of Social Media for Dissident Movements in an Integrated State Stability Framework

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Abstract—**Recent events in North Africa and the Gulf States have highlighted both the fragility of states worldwide and the ability of coordinated dissidents to challenge or topple regimes. The common processes of 'loads' generated by dissident activities and the core features of state resilience and its 'capacity' to withstand these 'loads' have been explored in the traditional "real world" view. More recently, however, there has been increased attention to the "cyber world"—the role of cyber technologies in coordinating and amplifying dissident messages, as well as in aiding regimes in suppressing anti-regime dissidents. As of yet, these two views (real and cyber) have not been integrated into a common framework that seeks to explain overall changes in regime stability over time. Further, emerging uses of social media technologies, such as Twitter have not fully been examined within an overall framework of state stability that represents the nature and dynamics of 'loads' generated by dissident activities in the real (i.e. protests) and cyber (i.e. planning and coordination via cyber venues) domains.**

Keywords-component; cyberspolitics; social media; state stability; modeling

I. INTRODUCTION

In international relations, the traditional approaches to understanding state stability were derived from experiences in the 19th and 20th centuries. But cyberspace enables new mechanisms for interactions, power, and leverage that are altering the dynamics of state stability and fragility. As Joseph Nye, Jr. writes: "States remain the dominant actors on the world stage, but they are finding the stage far more crowded and difficult to control." [11] From a policy perspective, cyberspace creates new conditions—problems and opportunities—for which there are no clear precedents. However, the degree to which cyber enabled technologies have altered current realities is very much up for debate.

One way to evaluate this question is via the use of social media in dissident movements. For example, the use of social media in recent uprisings during the "Arab Spring." While debate exists over the importance and impact of social media on real world events, it is clear that participation in cyber venues and the amount of content represented in non-English languages is increasing. There are currently 60 million Arabic speakers online in the Middle East and Google predicts this number to grow by fifty percent by 2013. In July 2010, there were 30,000 Tweets published per day in Arabic, compacted with nearly 2 million per day in October 2011. The goal of this paper is to examine the uses of social media (i.e., Twitter) *within an overall framework of state stability* that represents the nature and dynamics of both the 'loads' generated by dissident activities in the real (i.e. protests) and cyber (i.e. planning and coordination via cyber venues) domains.

II. MODELING CYBER POLITICS

To evaluate the potentials for social media to effect real world state stability, we begin by constructing a framework using systems thinking notation. The core strategy is to represent system structure in terms of causal connections that form feedback loops, the building blocks for articulating the dynamics of state stability.

For our purposes, the first step is to define the *overall domain* and system elements tending toward state stability and the sources of instability. This high level view is used for framing purposes, consistent with dominant lines of thinking in the social sciences. The value of system dynamics is that it also provides a method for empirical model grounding as well as policy evaluation. Next is to select and 'drill down' to the most important *processes* that shape threats to stability and enhance the propensities for instability. Ultimately, the task after that is to formulate a computational *system dynamics model* for simulation and analysis.

We begin by arguing that the stability of a state is a process, in that states can be at different stages of 'stability' and are subject to differing pressures toward instability [2]. The advent of cyber-enabled technologies, however, has potentially increased the type, magnitude, and timing of pressures on the state. There are multiple modes of fragility as well as different paths toward a range of 'end points'. It is well known that studies of state stability (and fragility) are closely connected to a wide range of issues in the social and the computational sciences such analyses of civil war, political

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mobilization, social disturbances, institutional development (or lack thereof), economic performance, social cohesion, ethnic violence and a range of issue areas that bear directly on the resilience of states and their capabilities, as well as on the pressures upon the state and the types of threats to its integrity and stability.

We have seen that the most likely states for civil war are those states that have recently undergone another war, states whose neighbors are involved in civil war, and states that are economically weak [3]. However, many social scientists and policy-makers identify the best device for preventing civil war as democracy [4]. Yet, on a global basis, Siegle, Weinstein and Halperin show that the evidence regarding which comes first, democracy or development, is still contentious [15]. By the same token, Hegre, et al. show that the greatest likelihood of civil war is not in a state which is the least-democratic, but rather civil war is much more likely to break out in a state which is semi-democratic [7]. Overall, we argue that a state is resilient to the extent that the loads or pressures upon it can be managed by its prevailing capabilities or performance capacity.

A. Causal Diagram: "Real World" State Stabiltty

The first step in identifying our operational approach to modeling state stability is to define the key system-features of state stability that captures key elements of the system in question and articulates major feedback loops.[1] Figure 1 presents the high-level causal diagram for state stability. In this diagram, the arrows show causal relationships between variables. A plus sign (+) indicates that a change in the first variable (at the tail of the arrow) causes a change in the second variable (at the head of the arrow) in the same directions. A minus sign (-) indicates that a change in the first variable causes a change in the second variable in the opposite directions. A path that begins at any variable and traces from arrow to arrow and returns to the original variable forms a feedback loop. The loop labels (rounded arrows in the center of the loop) corresponding to either reinforcing ("R") or balancing ("B") behavior.

Figure 1 depicts the four core feedback loops that describe the stability of the state as a dynamic process. We seek here to define broadly the *overall domain of state stability without reference to cyber effects.*
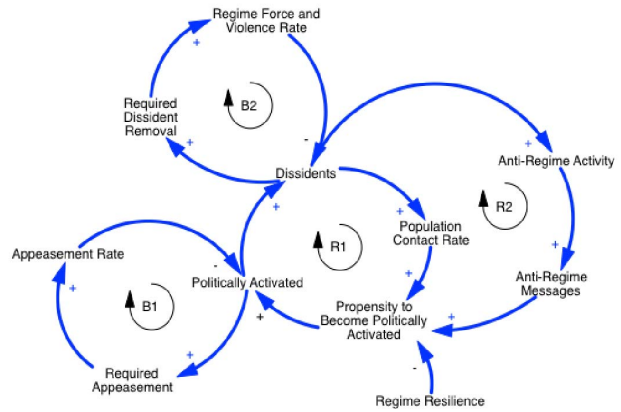
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[1] Unlike in traditional social science, in this diagram there is no one 'dependent variable' that reflects the overall stability status of the state; rather there are a whole range of potentially significant joint dependencies (and feedback dynamics) that capture overall system behavior and performance over time.

Figure 1. High-Level Diagram of State Stability

Regime Resilience: We begin by focusing on an ambient regime condition that captures critical constraint on the expansion of loads (dissidents and their behavior): resilience of the state. Our framework represents state resilience through an empirically derived function of key determinants, as indicated in the social science literature. Specifically, we draw upon economic performance, regime legitimacy, political capacity, and social capacity to compute the aggregate regime resilience [2].
Specifically:

Regime Resilience	$\alpha_t * \beta t * \gamma t * \delta t * \varepsilon t$
Polity:	$\alpha_t = |Polity_t / Polity_{1980}|$
Civil Liberties Index:	$\beta t = |CVI_t / CVI_{1980}|$
GDP Index:	$\gamma t = |(GDP_t/Population_t)/(GDP_{1980}/Population_{1980})|$
Employment Index:	$\delta t = |Emp\_per\_capita_t/Emp\_per\_capita_{1980}|$
Literacy Index:	$\varepsilon t = |Literacy_t/Literacy_{1980}|$

For Egypt, subject of our case study below, the index is shown in Figure 2.
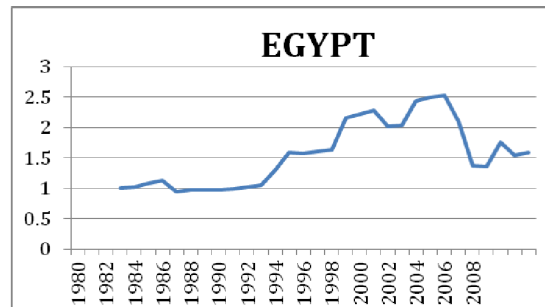

Figure 2. Egypt: Regime Resilience

It is interesting to note the steep decline in resilience in the mid-2000s preceding the events of the Arab Spring.

Loop R1: We begin with the assumption that, in any given state with a given number of people, there are some non-active yet anti-regime elements (the politically activated population) and there are some active anti-regime elements (dissidents). Once people in the general non-aligned population become politically activated, these individuals may become dissidents. As the dissident camp grows, they interact with the population at large and attempt to stimulate political engagement and activation. There activities increase the propensity to be recruited and eventually increase the ranks of the politically activated. Buffeting this transition is regime resilience, which can militate against political activation, thereby reducing a load on the stability of the system. For example, when the economy is doing well or when the regime is perceived as having increased legitimacy, the likelihood of an individual becoming a politically activated against the regime or a dissident becomes much smaller.

Loop B1: There are direct ways to curb this transition, however. Politically activated individuals might become appeased by the state and return to the general population. The level of appeasement required is signaled as a function of the numbers of politically activated. A peaceful regime change or a policy change may placate these individuals, increasing the appeasement rate, and reducing the numbers of politically activated.

Loop R2: To amplify their ability to attract individuals to anti-regime positions, dissidents can engage in anti-regime activities. Such incidents include protests, marches, or staged events. These activities create and circulate anti-regime messages, which include both formal and informal communications between individuals in a state. An anti-regime message based upon an intense incident might proclaim that the regime violently cracked down on *innocent* protestors, or that the regime can no longer effectively handle dissident movements. Messages of this sort can undermine the legitimacy of the regime and represent one form of loads on state capacity. Conversely, regimes can attempt to block activities and the circulation or messages and constrain the effect of R2. For example, such options include curfews, roadblocks, and restrictions on sizes of groups.

Loop B2: The regime has another response to dissident behavior – regime force and violence. Dissidents can be reduced in number through regime actions including arrests, detentions, or state violence

B. Causal Diagrams: "Cyber" State Stabiltty

Next, we add two new loops to describe the political effects that can now occur via cyber venues (Figure 3). In particular, we focus on the messaging effects of cyber-enabled technologies, both for the regime and for the dissidents.
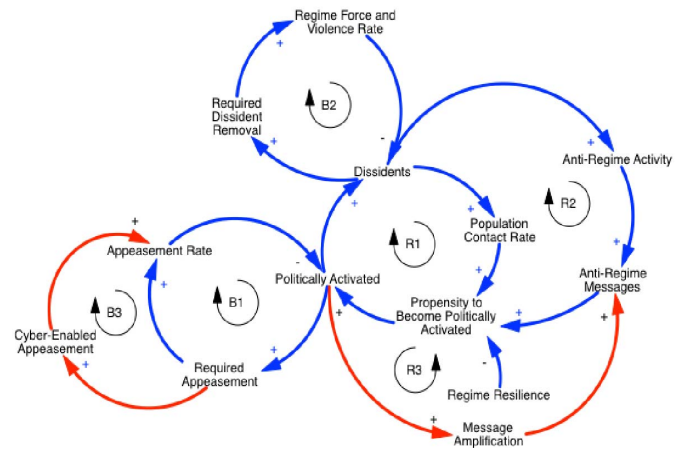

Figure 3. Political Effects Via Cyber Venues

Loop R3: Cyber venues can be used by the politically activated to "amplify" anti-regime messages without requiring participation in real world venues (such as protests.) The use of the technology to aid dissidents is in itself not new. Dissident groups have long utilized innovative technology, such as telephones, etc. However, cyber technologies have allowed for shifts in strategy and tactics, in this case by allowing for wider participation in dissident message creation and dissemination.

Loop B3: The same dynamics hold true for the regime, however. New tools can be used to appease new populations and spread pro-regime messages in real-time to relevant audiences.

C. Causal Diagrams: Additional Cyber Effects

Finally, we add in several potential effects of cyber-enabled technologies that are exogenous to our formation. (Figure 4). These variables rest on ambient characteristics within the state, such as technological advancement and availability for both the regime and the dissidents
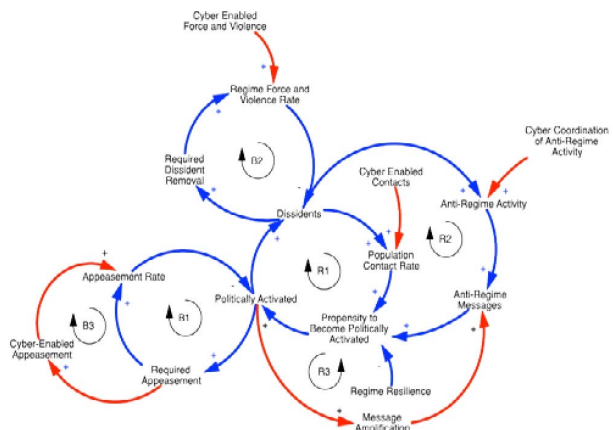

Figure 4. Supportive Cyber Effects

Cyber Enabled Force and Violence: The capacity to gather and disseminate large quantities of intelligence on potential

dissidents has provided states an ability to more precisely target individuals. In other phenomena not unlike the military domain, increased intelligence has facilitated more precise engagement through physical effects. States have demonstrated a willingness to target individuals based not on their behavior in the physical world (protesting, etc) but exclusively on their activity in cyberspace. Perhaps the most obvious example of this is the arrest of prominent Internet activists [9].

Cyber Coordination of Anti-Regime Activity: Cyberspace also enables dissidents to better coordinate their activities. This improved coordination applies to both cyberspace and real-world activities. The value of this improved coordination can be understood when one considers the relative magnitude of the force of two equal sized groups of individuals can place on the state. All things being equal, if the first group is able to arrange to meet at a certain time and place in order to protest or initiate some other form of civil disobedience, their impact is much greater than a second group initiating uncoordinated, isolated activity as individuals. Moreover, cyber-enabled coordination can better optimize the times and locations of the dissident activity in order to maximize exposure for mainstream media coverage [13].

III. CASE STUDY: EGYPT

To provide a depiction of these dynamics, we develop a case study on the overthrow of Hosni Mubarak's regime and 30-year reign as president. We recreate the events of the regime change via the twitter record and annotate our casual diagrams with specific events.

A. Background

Egypt has had a long history of group protests, especially in the 21st century, including the second Palestinian intifada of 2000, Iraq War protests in 2003, and more recent strikes and political protests since early 2006. These protest groups, some formal and some informal, have sparked dissident uprisings throughout Egypt, ultimately leading to the 18-day protest in late January and early February that forced Mubarak to resign. However, the creation, implementation, and success of this uprising involved protests from dissidents and pro-regime activists alike. Throughout the 18-day period, protesters filled up Tahrir Square in Cairo and used social media such as blogs, Twitter, and Facebook to not only share their experiences on the ground, but also spark interest and gain support for their fight against the Egyptian regime.

A main factor in the success of the Egyptian revolt was the earlier overthrow of Ben Ali, Tunisia's dictator for over 24 years. Sparked by a man who set himself on fire after police destroyed his fruit stand, the successful overthrow of the Tunisian regime paved the way for uprisings across the Arab region. The protests in Tunisia started on December 17, 2010 and ended January 14, 2011.

B. Case Study: Annotating Casual Diagrams with Twitter Records

In Figure 5, we present the causal diagram with text numbers signaling elements of the Egypt case study narration described below.
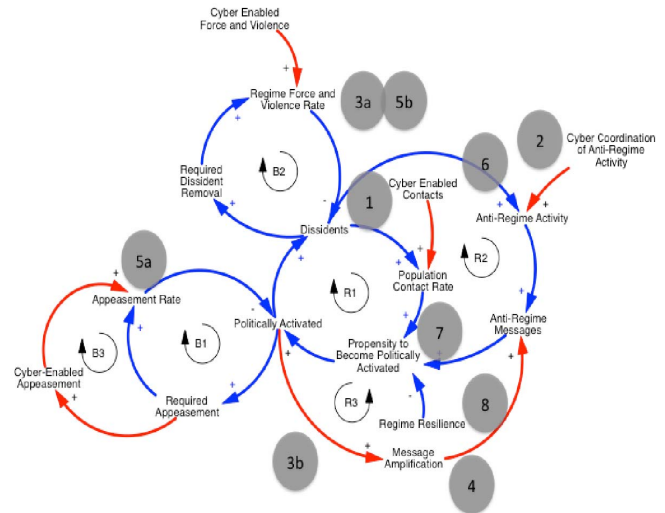

Figure **5**. Egypt Case Study Via Causal Diagrams

1. Cyber Enabled Contacts: Anti-regime opponents attempted to *increase* the population contact rate via cyber venues (loop R1).

Almost immediately, Egyptians were inspired and began to use social media to express their joy, disbelief, and future plans, as seen by the following Twitter posts [6].

tarekshalaby - *WE WILL FOLLOW! RT @SultanAlQassemi: Tunisians are the heroes of the Arab world.*
19:29:27 Jan 14
TravellerW - *Tonight some ppl will go to bed thinking "I helped free my country today". #Tunisia's activists & demonstrators, we salute you.*
00:59:10 Jan 15
Gsquare86 - *There is nothing that #Mubarak can do now to prevent the madness that will end his regime..IT WILL HAPPEN THIS YEAR!! #DownWithMubarak 2011*
13:57:35 Jan 18

2. Cyber Enabled Coordination: Anti-regime opponents engaged in cyber coordination to *increase* anti-regime activity such as protests (loop R2).

News of Ali's end of power and the success of the protests in Tunisia brought confidence to politically activated individuals in Egypt. With this newfound confidence, political activists and dissidents planned the first of many protests on January 25, which were National Police Day and a public holiday.

Monasosh - *What time should we be in the streets tomorrow #jan25?*
09:57:06 Jan 24
Sandmonkey - *For when and where the revolution will be and other important info, go here http://bit.ly/Jan25egypt*
21:51:18 Jan 24

The scheduled date, January 25, served as a popular hash-tag (#jan25) on Twitter and served as a cyber symbol throughout the Egyptian protests. By using this hash-tag, all Tweets with #jan25 were visible to those who used the hash-tag before, creating a virtual platform for news-sharing and protest organization. Protests were organized online through Facebook and Twitter and other popular social media platforms, leading to protests in several cities including Alexandria, Suez, and Cairo. These protests ranged from a few hundred in smaller cities to a few thousand in Cairo. Protesters called for the removal of the regime.

3a . Regime Response (violent) and 3b (cyber): The regime response to the anti-regime forces both violently, by increasing the rate of regime force and violence, and by *decreasing* the ability for message amplification by restricting cyber venues and applications. (Loops B2 and R3)

Protesters were confronted by police, who used tear gas, rocks, sticks, and water cannons to control the crowd. Aside from physical crackdowns, cyber crackdowns initiated by Mubarak's regime began in the early afternoon, with a blockage of Twitter. However, dissidents used proxy servers to bypass the government blockage of Twitter and continued to provide information through social media.
3arabawy (عمو حساﻡ) - *to break the block on Twitter use this proxy: http://hidemyass.com/ #Jan25*
18:40:10 Jan 25

The first protests on January 25 brought about thousands of individuals, and forced the government to respond with physical and cyber attacks. The blockage of Twitter was followed with the blockage of Facebook on January 26. However, arguably the most popular dissident-run Facebook page called for a mass protest on Friday, January 28, before the shutdown. The fear of dissident cyber-activity was evident for both dissidents and the regime, but dissidents continued to use proxies to Tweet and use Facebook.
3arabawy (عمو حساﻡ) - *There r calls circulating widely via SMS for protests on Friday following the prayers. #Jan25*
22:40:07 Jan 26

Afraid of the threats that cyber communication brought, the Egyptian government shut down all internet and mobile phone providers in the country at approximately 12:00AM on Friday, January 28.

4. Increased Anti-Regime Activity and growth in Anti-Regime opponents. Despite regime responses and restrictions on cyber activity, protests continue to swell through the circulation of anti-regime messages (Loops R3).

Earlier communication through cyber platforms prior to the shutdown of the internet, as well as the success of the protests on January 25, brought about a huge protest on January 28. The few thousands on Tuesday turned into hundreds of thousands of protesters in Cairo on Friday.
Sandmonkey - *Yesterday: we started protest in Imbaba w/10 ppl, grew to 10,000. Headed from Imbaba 2 Mohandesin where police fired tear gas #Jan25*
13:31:35 Jan 29

With the internet shut off, dissidents implemented strategies to continue sharing news, pictures, videos, etc. including using the Egyptian stock exchange's ISP and calling friends in other countries to Tweet for them.

5a. Regime violence and 5b. attempted appeasement: The regime increase violence by using live fire and attempts to appease anti-regime opponents. (Loops B1 and B2):

In response to the massive amount of protesters, the crackdown by the regime escalated to using live fire and army tanks. Mubarak also appeared on Egypt State TV that night, declaring that his entire cabinet had been dismissed but he would remain President. After Mubarak's announcement, dissident participation increased significantly as well as the severity of violence. Dissidents burned down the Egypt NPD, while the regime killed and injured hundreds of protesters.

Gsquare86 – *I have internet access from an 'unknown' location, the people are in MILLIONS in the streets and will NOT stop until MUBARAK is OUT!*
13:45:09 Jan 29
the riot police was shooting at us with shrapnel bullets, live bullets, water canon, rocks, and of course TEARGAS.. so many people have died, hospitals are in need of blood, please tell everyone u know to donate blood at hospitals
13:48:41 Jan 29

With continued discourse between dissidents and the regime-appointed army, tensions continued to grow, but less violence was seen as the number of protesters was too massive. An organized "million man march," was advertised on Twitter and Facebook, although most internet service providers were still shut down.

6. Restricting anti-regime activity rate: The regime attempts to stop protests to reduce dissident activity and the creation of messages. (Loop R2)

Additionally, access to Tahrir Square and Cairo in general was blocked off due to barriers created by the regime and shutdown of public transportation systems. On the Tuesday of the "million man march," Mubarak spoke publically again and stated he would stay in office until scheduled elections in

September, 2011. Furthermore, pro-Mubarak activists began to stage protests of their own.

Sandmonkey - *made it into tahrir. They shut down major entrances &making it very difficult to get in but thousands &thousands of ppl here. #Jan25*
11:55:44 Feb 1

ashrafkhalil - *Raucous pro-Mubarak rally happening right now around the corner from Tahrir. Looks like about seven hundred people. #Jan25*
05:38:21 Feb 2

7. Increasing propensity to become politically activated: Despite regime attempts at violence and appeasement, the ranks of the politically activated and dissident continue to rise. (Loop R1)

The introduction of pro-Mubarak counter-protests created violent fights between dissidents and regime supporters. Regime supporters used horses and camels to charge into crowds of dissidents and utilized Molotov cocktails and guns. The absence of army intervention in the fight for control of Tahrir Square forced incredible tension between the two groups of activists and caused hundreds injuries and deaths.

mosaaberizing - *General state: thousands of thugs bombarding us with molotov & stones from October bridge. We're keeping our high lines and defending well.*
03:51:38 Feb 3

In addition to fighting the dissidents, pro-Mubarak activists attacked and detained journalists and correspondents from news stations. Furthermore, the regime denied involvement with any attacks and attempted to appease protesters by informing them Mubarak's son would not be running for president. They also brought back several internet service providers. Throughout these constant hurdles, dissidents continued to assemble and saw huge numbers of protesters in Tahrir Square on the following Friday.

3arabawy (عمو حسام) - *there must b at least half a million protesters in the square and we haven't even started! #jan25*
13:00:43 Feb 4

What began with violent orders for crackdowns from the regime turned into a battle between pro-Mubarak and anti-Mubarak activists. The regime seemed to be a bystander and decided to reopen banks and public corporations on February 6. Although the regime continued to deny any participation in detainment of reporters, a Google marketing executive who spoke of the importance of free speech on the internet at the beginning of the protests was discovered to have been in detainment for 11 days and released on February 6. Fueled by disappointed and angered citizens, protests on February 8 were met with labor strikes from professors and also support from the Egyptian army.

3arabawy (عمو حسام) – *3000 university professors r now marching on Tahrir from Manyal. #jan25*
12:52:4 Feb 8
a soldier now murmured to me: we r with u

14:06:50 Feb 8

8. Weakening regime resilience: Strikes rise to weaken state economic performance and reduce the underpinnings of resilience. (Loop R1)

The strikes experienced in Egypt since 2006 were now at their highest magnitude, with students and people of all occupations refusing to work until Mubarak was out of power. This lack of a workforce forced the regime to reconsider its direction and possibilities. Seeing the overthrow of the regime imminent, dissidents become anxious to see Mubarak step down from power. The excitement and anxiety spread throughout all of Egypt, with Tahrir Square being especially jubilant. The moment finally came on February 11, 18 days after the first protests in Tahrir Square.

Zeinobia - *Al Arabiya : nearly 20 million Egyptians are in the street today #Jan25*
17:35:31 Feb 11

TravellerW - *Egypt, the Middle East, the World will never be the same. From #Tahrir square - CONGRATULATIONS, FREE #EGYPT! #jan25*
18:15:14 Feb 11

Gsquare86 - *Thank you Tunisians 4m the bottom of my heart. Algeria, Yemen, Jordan, Palestine, Saudi, Syria & Libya: keep fighting, nothing is impossible*
20:24:59 Feb 11

Observations

The successful overthrow of Mubarak's regime depended on several factors such as the previous successful overthrow in Tunisia and activity in both the real and cyber realms. Sparked by confidence as a result of Tunisia's uprising, anti-Mubarak citizens, political activists, and dissidents used power in numbers to overpower the regime-sponsored army, pro-Mubarak activists, and ultimately the Mubarak regime.

Throughout the 18 days of protest, hundreds were killed and thousands were injured. The impact of dissidents in the real, physical realm consisted mainly of starting protests in several cities including Alexandria, Suez, and Cairo. The protests were fueled by the high rate of youth unemployment as about two-thirds of Egyptian dissidents were under that age of 30. Protests, especially those in Tahrir Square, saw a large number of dissidents every day, ranging from a few thousand to half a million. By dominating and controlling Tahrir Square for the entirety of the Egyptian Revolution, dissidents successfully held off regime-controlled military personnel and violent pro-Mubarak activists. Dissidents were also responsible for the destruction of several government buildings, including the Egyptian NDP and Supreme Council of Press, and the deaths of many pro-Mubarak activists. Furthermore, dissidents and political activists brought Mubarak's regime to its tipping point by organizing massive

labor strikes and refusing to work until they got what they wanted.

Conversely, the physical actions performed by Mubarak's regime and its subsidiaries were more controlling and violent than those of the dissidents. The regime resisted the actions of dissidents by cracking down on protests, which began with the use of tear gas, rocks, and sticks but escalated to the use of tanks, guns, and Molotov cocktails. It's estimated that more than 300 people died over the 18-day period. Aside from cracking down on protests, regime officials also limited and blocked entry to cities and public spaces by shutting down buses, trains, and other forms of public transportation.

However, when public spaces did become extremely populated, policemen and regime officials arrested protesters, especially those taking pictures of the protest. The regime was extremely fearful of cyber activity, and arrested bloggers and journalists. Although Mubarak's regime cracked down on dissidents in many ways, they also sought to appease the protesters by promising reform. For example, Mubarak first appeared on Egypt state TV to announce the dismissal of his cabinet, appeared again to state he would resign after scheduled elections in September, and appeared a third time to announce his formal resignation as president.

While the exact impact of dissident cyber activity in the form of Facebook, Twitter, blogs, Flickr, YouTube, etc. is not known, there is a sense of agreement that social media had a significant effect on the effectiveness and speed of the regime overthrow. "Cyber politicians" were prevalent across several social media platforms, using these platforms to inform, inspire, recruit, and coordinate with other political activists. Use of social media, as seen by example of the Tweets throughout this study, shares information with domestic and international groups and helps to inform when and where political uprisings would occur. Aside from spreading information, social media also served to raise morale throughout the region. Almost all notable Tweets referenced the popular hash-tag "#jan25".

Although Twitter was widely popular, Facebook allowed dissidents to receive immediate feedback about events or ideas through creation of events. For example, famous cyber dissident Wael Ghonim, who created the "We Are All Khaled Said" Facebook page, waited until he had 100,000 followers or "fans" before he announced and coordinated the protests on January 28. Social media cannot take full responsibility for the massive rise in attendance at protests, but there seems to be a strong correlation between the amount of social media pressure / motivation and protest involvement, especially in the early stages of the Revolution.

Seeing the potential for how cyberpolitics could help overthrow the regime, Mubarak immediately shut down social media pages, including Twitter on January 25 and Facebook on January 26. After seeing cyber dissidents using proxy servers to bypass the government's blockage of Facebook and Twitter, Mubarak completely shut down all Internet Service Providers and multiple mobile phone providers shortly after midnight on January 28. Furthermore, Mubarak's regime attempted to halt internet penetration to a measly 20% to make sure foreign media did not influence dissident activity. However, even with so many restrictions on internet and cell phone usage, all types of Egyptian dissidents, technologically-savvy and not, found ways to read information online and share their experiences through social media platforms. Ultimately, Mubarak's regime saw Twitter and Facebook as valuable assets to dissidents and sought to appease the dissident population by lifting the shutdown of ISPs. This psychological view, along with the constant pursuit of cyber sharing by Egyptians, infers that cyberpolitics did in fact have a significant effect on the speed and effectiveness of the Egyptian Revolution.

IV.   CONCLUSION: DOES CYBER MATTER FOR STATE STABILTIY

Few would disagree that cyberspace is playing an increasingly important role in the relationship between individuals and the state. Recent events in North Africa in the Arab States, particularly the collapse of regimes in Tunisia and Egypt, have created renewed debate on the role cyber technologies in politics, particularly regarding potentially democratizing influence of the Internet. Having developed a framework to disaggregate the individual cyber effects and shown how they may operate in one example (Egypt) through an annotation via Twitter narrative, we finally examine the emerging debate on the role of cyber in dissident movements. Observers and commentators generally fall into three groups: those who emphasis the role of cyber technologies in coordinating and amplifying dissident behavior (the 'loads' on the state); those who emphasis the role of cyber technologies in aiding regimes in balancing this loads and increasing stability (the 'capacities' of the state); and those who argue cyber technologies haven't substantively altered the balance between loads and capacities.

Regarding the dissident supporting attributes, Hill and Hughes, writing early on in the diffusion of cyber technologies noted a positive correlation between measures of democracy and Internet diffusion in most countries [5]. Subsequently, others have refined the causal connection between Internet diffusion and democracy. Best and Wade argue that the growth of the Internet will foster more democratic behavior among citizens and weaken dictatorial regimes [1].

More recently, the pathways by which cyber technologies aid dissident movement have been refined. Yochai Benkler, writing in regards to citizen participation, argues that the Internet has created tremendous possibilities for the media by overcoming limited points of media production under traditional mass made, which made it easy for authoritarian regimes to capture and control media outlets

[16]. However, Kalathil and Boas argue that in extreme authoritarian regimes, the impact of the Internet on democracy is more nebulous [9]. More recently, Morozov has argued that authoritarian governments are effectively using the Internet to suppress free speech, hone their surveillance techniques, and disseminate cutting-edge propaganda [10].

Still others argue that cyber technologies don't matter in the overall balance between loads and capacities. Writing in the New Yorker, Malcom Gladwell agues: "People protested and brought down governments before Facebook was invented. They did it before the Internet came along. Barely anyone in East Germany in the nineteen-eighties had a phone….People with a grievance will always find ways to communicate with each other. How they choose to do it is less interesting, in the end, than why they were driven to do it in the first place." [5]

The empirical record is equally divided. Prior to recent event in North Africa and the Arab states, there have been several regime changes that observers cite when arguing the efficacy of cyber enabled technologies to enable dissidents to threaten state stability: Philippines (2001), Spain (2004), Moldova (2009). There are, however, several cases in which, despite pervasive use of cyber-enabled technologies by dissidents, state stability was not overwhelmed: Belarus (2006), Iran (2009), and Thailand (2010) [14].

Given the ambiguities in the theoretical and empirical record, we have taken an important step towards understanding of the role of cyber-enabled technologies in a common framework that: a) draws upon the fundamentals of state stability; b) enables key linkages; c) recognizes dynamics and feedback; and d) enables the formation of robust simulation models.

Based on the casual loop diagrams, experts and data we have constructed quantitative simulation models—utilizing the system dynamics modeling methodology. We are mining existing data to paramertize and execute the model and developing theories on the impacts of social media in state stability.

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