Chapter 2: From Evidence to Model

The purpose of this chapter is to review the quantitative and qualitative evidence on the impact of the information revolution on state-society relations. As Drezner (2010) notes, "parsing out how ICTs affect the tug-of-war between states and civil society activists is exceedingly difficult." Indeed, "it is particularly challenging to disentangle political, social and technology factors" (Diamond 2010). As Howard (2010) notes, "There are several methodological approaches to answering this question: a quantitative approach using large-N datasets and statistical tools that demonstrate how variation in democratic outcomes are correlated with variables that serve as proxies for theoretically interesting explanatory factors; a qualitative and comparative approach using specific cases and narrative arguments that trace out causal connections in a more direct and nuanced manner."

The goal if literature review is to make these effects more explicit to develop a conceptual framework that can be used to assess whether—and if so how—liberation technologies change the balance of power between repressive regimes and social movements. The first section of this chapter consists of a literature review of statistical studies on the impact of technology on protest movements and democracy writ large. Section two presents a more in depth literature view of the underlying causal dynamics that may explain the many links between access to new digital technologies and an increase in protests against authoritarian regimes. The third and final section details how the findings from the literature reviewed are applied to the mixed-methods approach used in this dissertation research (Chapters 3 and 4).

2.1: Cross-Disciplinary Literature Review

Do information and communication technologies empower coercive regimes at the expense of resistance movements or vice versa? The first section of this literature review summarizes the findings from more macro-level, quantitative studies on the impact of technology on protest movements and democracy writ large. As Groshek (2010) notes, "Technological developments, especially communicative ones, have long been positioned—and even romanticized—as powerful instruments of democracy (Dunham, 1938; Lerner, 1958). This tradition goes back at least as far as the printing press and its

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contribution to democratic movements of past centuries (Schudson, 1999) in relation to conceptions of the public sphere and the fourth estate (Jones, 2000). Over the course of the past century, telegraphs, telephones, radios, and televisions were all introduced as 'new' media, and each of these technologies were often ascribed broad potential for enhancing democratic development around the world (Becker, 2001; Navia & Zweifel, 2006; Spinelli, 1996)."

The conclusions from this review of the quantitative literature are mixed. Quantitative studies don't capture the tactical dynamics that may shed light on the causal linkages between access to new technologies and social protests. Furthermore, a macro-level framework may be too limiting given the cross-disciplinary nature of the literature. The second section of this literature review therefore follows Garrett's (2006) lead and builds on a more appropriate framework developed by McAdam, McCarthy and Zald (1996), which "explains the emergence, development and outcomes of social movements by addressing three interrelated factors: mobilizing structures, opportunity structures and framing processes" (Garrett 2006). What follows therefore is a literature view in two parts: a macro-level review of statistical studies (Section 2.1.1) and a micro-level review of qualitative research (Section 2.1.2). Section 2 discusses the findings from both literature reviews.

2.1.1 Macro-level Review

Kedzie (1997) appears to be the first to take a quantitative approach to the question of Internet and democracy. He draws on data from 144 countries and uses linear regression analysis to "compare the strength of traditional predictors of democracy including economic development and education, human development and health, ethnicity and culture, as well as indicators that represent pre-Internet ICTs, and studies them against the strength of Internet prevalence" (Best and Wade 2009). The results of Kedzie's analysis suggest that the Internet is a stronger predictor of democracy than the other more traditional predictors. However, the analysis is based on data from 1993, a time when the number of Internet users was still very low, especially in developing countries.

Eyck (2001) notes that "the lack of attention paid to information technologies in predicting variations of political protest in cross-national studies is surprising," especially since "there is reason to believe that information technologies do play a part in the political protest at the 'street' level". Indeed, Eyck argues that quantitative models used to explain the variations in cross-national studies of political protest typically do *not* include measurements of ICTs (Eyck 2001; See also Moaddel 1994; Boswell and Dixon 1990; London and Robinson 1989; Muller and Seligson 1987; Muller 1985).

Eyck's (2001) large-N quantitative study on ICTs and political protests appears to be the only analysis of its kind. The study, which uses object least squared (OLS) regressions, consists of demonstrations, strikes and riots that took place in 86 countries. The findings "point to the importance of the influence of information technologies have in helping to predict politically-motivated collective behavior" (Eyck 2001). However, the study is limited to the time period between 1970 and 1977 when "computer networks and e-mail were not part of the larger information landscape" (Eyck 2001). In addition, the analysis does not take mobile phones into account since they did not exist during the time period under study. Strangely, Eyck (2001) maintains that the findings are *not* "outdated or specific to the time period." Another limitation of Eyck's study is that the frequency of protests were measured at the annual level, which is problematic: "if communication and information technologies are a part of political protests, then we must get more detailed information of the timing of the protests to see if they occur in clusters, which we would expect to happen" (Eyck 2001).

Best and Wade (2009) assess the global effect of Internet on democracy between 1992 and 2002 for some 180 countries. The authors analyze relationships between measures related to democracy and Internet prevalence by region using various statistical methods. They find that "the Internet was not able to explain significant variation in democracy cores" (Best and Wade, 2009). That said, the authors' 2001-2002 results indicated a "substantial relationship between Internet usage and democracy" even when "accounting for region and socioeconomic development." While certain regions are not influenced by levels of Internet usage, the study's findings, "supports the existence of a positive relationship between democratic growth and Internet penetration" (Best and Wade 2009). The study's biggest limitations are: (1) the data used is limited to 2002, i.e.,

well before the onset of Web 2.0 and tools like Twitter; and (2) the potential impact of mobile phones is ignored.

The most recent macro-level quantitative study to be published found that the democratic effects of the Internet were nil (Groshek 2010). Groshek concludes that, "Internet diffusion was not a specific causal mechanism of national-level democratic growth during the timeframe analyzed," which was 1994-2003. The author therefore argues that "the diffusion of the Internet should not be considered a democratic panacea, but rather a component of contemporary democratization processes." Interestingly, these conclusions seem to somewhat contradict Groshek's own findings from 2009 (reviewed in more detail later).

For the 2010 study, Groshek used "macro-level time-series democracy data from an historical sample of 72 countries, reaching back as far as 1946 in some cases, but at least from 1954 to 2003. From this sample, a sequence of ARIMA (autoregressive integrated moving average) time–series regressions were modeled for each country for at least 40 years prior to 1994" (Groshek 2010). These models were subsequently used to "generate statistically-forecasted democracy values for each country, in each year from 1994 to 2003. A 95% confidence interval with an upper and lower democracy score was then constructed around each of the forecasted values using dynamic mean squared errors. The actual democracy scores of each country for each year from 1994 to 2003 were then compared to the upper and lower values of the confidence interval" (Groshek 2010).

The results of the time-series analysis found that 3 of the 72 countries demonstrated democracy levels greater than those statistically predicted: Croatia, Indonesia and Mexico. Groshek (2010) carried out some qualitative analysis on each to "identify whether the Internet acted as a specific causal mechanism that may have contributed to democratization processes." But the results of the qualitative analysis did not provide any evidence that the Internet played an important role in the democratic growth measured in each country.

Groshek (2010) thus concludes that one should "consider the Internet a potentially potent but underutilized democratic tool, one that is only as useful as the citizens who employ and implement it for political purposes (Schudson, 2003)." Indeed, "virtuosity and democratic agency are not inherent in media technologies, no matter how interactive or participatory. Rather, these exist in individuals, and in the crucial applications and uses they make of communicative technologies (Nord, 2001; Schudson, 1999, 2003)" (Groshek 2010). Perhaps one critique of Groshek's analysis is that he "treats democracy as a condition (a state of being), rather than a series of processes. Rather, it is a complex of *processes*, with elections only a small part" (Livingston 2011).

The main drawback of the analysis, however, is the time period that the data covers. As Joyce (2010) correctly notes, major social media platforms used for activism, like YouTube (2005), Facebook (2004) and Twitter (2006), were created after 2003. "According to the Global Digital Activism Data Set (GDADS), the Meta-Activism Project's open collection of 1,005 digital activism cases from 114 countries, real growth in the use of digital technology for campaigning and public political speech did not see a significant increase until 2006. While part of this jump may be due to increased reporting of digital activism, rather than increase frequency […] anecdotal evidence also supports the conclusion that online political activism did not come into its own until after 2003" (Joyce 2010).

In 2009, Groshek published findings from a large-N quantitative study using macro-level panel data on 152 countries from 1994 to 2003 and multi regression models. Groshek (2009) found that "increased Internet diffusion was a meaningful predictor of more democratic regimes." This democratic effect was greater in countries that were at least partially democratic where the Internet was more prevalent. In addition, the association between Internet diffusion and democracy was statistically significant in "developing countries where the average level of sociopolitical instability was much higher." The author thus concluded that policy makers should consider the democratic potential of the Internet but be mindful of unintended consequences in countries under authoritarian rule. In other words, "the democratic potential of the Internet is great, but actual effects might be limited because Internet diffusion appears conditional upon national-level democracy itself" (Groshek 2009). Like the 2010 study, this one is significantly limited since the data used is restricted to pre-2003.

It is important to note that the analysis carried out by Groshek (2009, 2010) does not factor in the possible impact mobile phone of mobile phones. In contrast, the large-N quantitative study carried out by Miard (2009) assesses whether the number mobile phones affect political activity. This is an area in much need of empirical analysis since "little systematic research beyond loose collections of case studies has been done so far" (Miard 2009). The study uses negative binomial regression (with one year time lag) to test whether the number of mobile phone subscribers is a statistically significant predictor of political activism. The large-N study draws on the proprietary Cross-National Time-Series Data Archive (CNTS) for data on three forms of political activism: anti-government demonstrations, riots and major government crises. This dataset is derived from articles published in the New York Times. The data used in the study spans 191 countries between 1991-2006 but only two-thirds of the countries were actually included in the analysis due to missing values.

The results indicate that mobile density has no significant effect on anti-government demonstrations when the control variables are included. The same is true when using riots or major government crises as dependent variables. GDP per capita is small and insignificant except for riots, where it has a significant negative effect. Population has an effect on all three variants of political activism variables. Miard (2009) therefore concludes that mobile connectivity is neither negatively nor positively associated with political activism. This implies that existing case studies "are overrated and that generalization by means of a global comparative case study is not possible" (Miard 2009). He suggests that future quantitative research take into account the following two recommendations: (1) Compare the impact of mobile phones on democratic versus oppressive regimes; (2) Analyze the combined impact of mobile phones and the Internet in addition to traditional technology variables.

Howard (2011) studied how information infrastructure supports democratic transitions in countries with large Muslim populations. He developed a weighted index of technology diffusion and a democracy index for 74 countries between 1994 and 2008. "The index of technology diffusion was computed […] for mobile phones, Internet users, Internet hosts, personal computers, national Internet bandwidth, and broadband Internet users, and then averaged and transformed into set-theoretic values" (Howard 2011). Each technology variable was first weighted against the GPD of each country to

hold wealth constant before computing the diffusion index. The result reveals the level of technology diffusion in a country given its share of economic output relative to the other countries in the study. Howard then used fuzzy-set statistical models to stratify the countries into three clusters based on levels of information technology infrastructure and democratic transition. Next, Howard employed correlational statistical techniques to show that 6% of the variation in democratization across the Arab World can be explained by technology diffusion.

The results of Howard's fuzzy-set statistical analysis further "demonstrate that an active online civil society and good state information infrastructure in small countries with well educated populations has resulted in democratic transitions. The two most prominent and parsimonious sufficient causes of democratic transition share one ingredient—having a comparatively active online civil society. Having such an active online civil society, along with having a comparatively small population or a comparatively well-educated population, proves to represent almost two-thirds of the cases studied" (Howard 2011). Furthermore, the results show that "it is the relatively large internet and mobile phone user base—a wired civil society—that consistently serves as a causal condition across multiple democratization recipes" (Howard 2011). Furthermore, "among the countries with large Muslim communities, those with a rapidly expanding information infrastructure experienced either democratic transitions or entrenchment. This conclusion makes an explicit link through which technology diffusion can contribute to democratization" (Howard 2011).

More specifically, "for countries such as Bosnia, Georgia, and Indonesia, good ICT infrastructure supported strong democratic movements. For Azerbaijan and the Central African Republic, the lack of technology diffusion has allowed for deepening authoritarianism. For countries such as Benin, Eritrea, and Gambia, technology diffusion has not been particularly rapid, and democratization movements in these countries have had little success" (Howard 2011). That said, Howard argues that statistical analysis alone is not sufficient to assess how information infrastructure supports democratic transitions. He therefore advocates for a qualitative and comparative research to complement the quantitative analysis. To be sure, "perhaps the best reason to proceed in a qualitative and comparative way is that the categories of 'democracy' and 'technology

diffusion' are themselves aggregates and proxies for other measurable phenomena" (Howard 2011).

This comparative literature review of macro-level, quantitative studies is summarized in the table below.

Published	Author(s)	Period	Countries	Findings	Strengths	Weaknesses
1997	**Kedzie**	1993	144	Internet stronger predictor of democracy than traditional predictors	Regression analysis; Large N	Limited to 1993; Aggregates democratic and authoritarian states
2001	**Eyck**	1970-1977	86	ICTs can predict politically motivated collective behavior	Strikes and riots as dependent variable	Limited to traditional ICTs; Aggregates democratic and authoritarian states
2009	**Best/Wade**	1992-2002	180	No impact of Internet on democracy for 1992-2002 but strong impact for 2001-2002	Employs various statistical methods; Stratifies data by region; Large N	Limited to data through 2002; Does not include mobile phones; Aggregates democratic and authoritarian states

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2009	**Groshek**	1994-2003	152	Internet is weak but meaningful predictor of democratic regimes	Uses multi-regression analysis; Stratifies data by level of democracy; Large N	Limited to data through 2003; Does not include mobile phones
2009	**Miard**	1991-2006	120	Mobile phones have no impact on anti-government protests	Protest as dependent variable; focuses on mobile phones; data goes through 2006; Large N	Aggregates democratic and authoritarian states; Does not include Internet
2010	**Groshek**	1994-2003	72	No impact of Internet on democratic growth	Uses time-series regression analysis	Limited to data through 2003; Contradicts Groshek 2009; Aggregates democratic and authoritarian states
2011	**Howard**	1994-2010	75	ICTs diffusion explains variations in democratization	Uses fuzzy-set statistical models; data through 2008; Combines Internet and mobile phones; Stratifies data by democratic levels	Limited to countries with large Muslim populations

2.1.2 Micro-level Review

The second section of this literature review takes a more micro-level, qualitative approach and thus follows Garrett's (2006) lead and builds on a more appropriate framework developed by McAdam, McCarthy and Zald (1996), which "explains the emergence, development and outcomes of social movements by addressing three interrelated factors: mobilizing structures, opportunity structures and framing processes" (Garrett 2006).
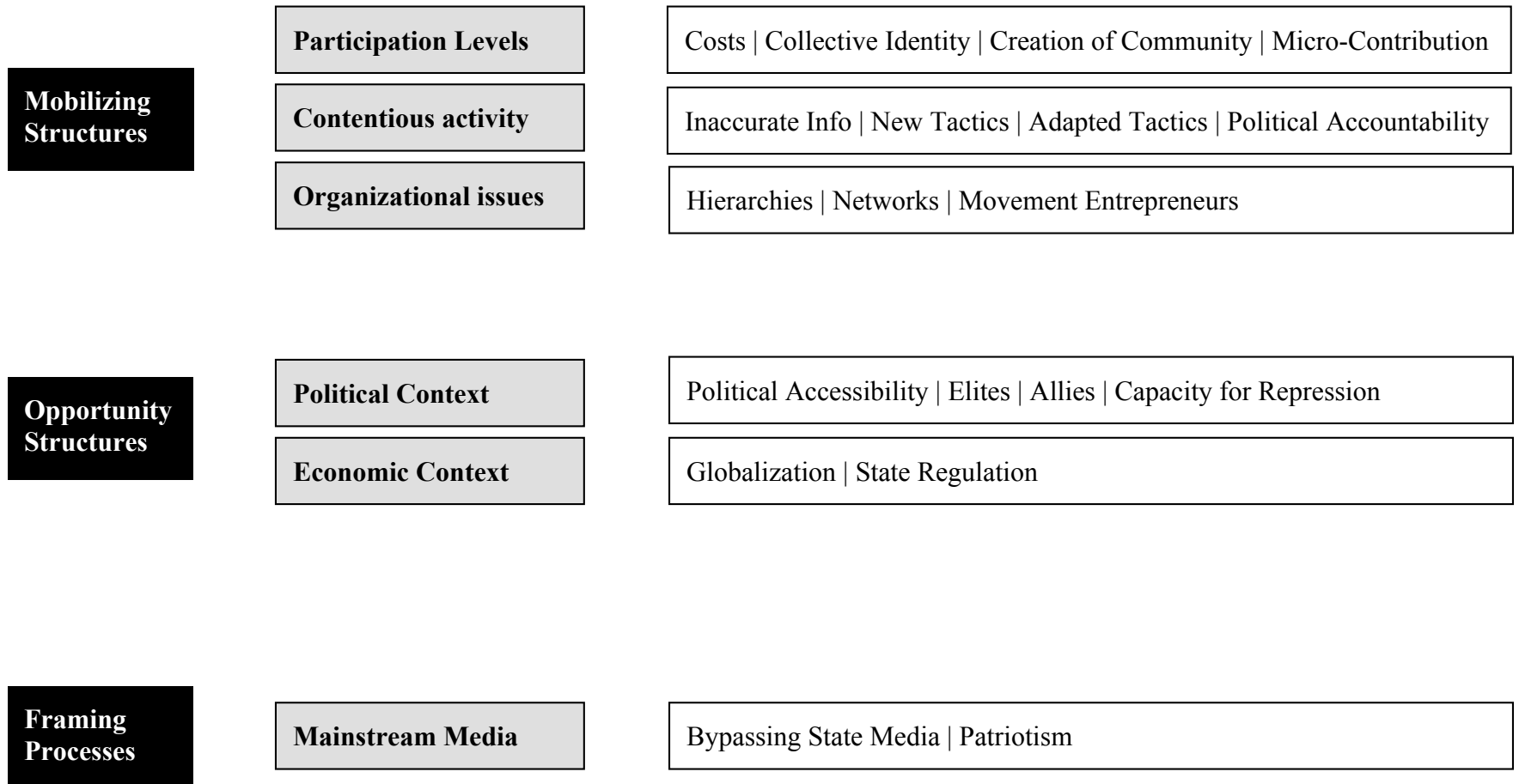
Mobilizing Structures are the mechanisms that facilitate organization and collective action. These include social structures and tactical repertoires (McCarthy 1996). Opportunity Structures are conditions that favor social movement activity. For example, these include factors such as the state's capacity and propensity for repression (McAdam 1996). Framing Processes are "strategic attempts to craft, disseminate, and contest the language and narratives used to describe a movement" (Garrett 2006).

> "Organizing a review of the relationship between social movements and new ICTs along these lines facilitates conversations across the field around common issues of concern, highlighting connections between scholars and research agendas that might otherwise be difficult to discern. The breadth of the framework, integrating several major strands of social movement scholarship, makes it particularly appropriate to the task. A recent volume addressing the relationship between social movements and new ICTs (van de Donk *et al.* 2004) effectively employs a similar strategy for integrating the studies it includes" (Garett 2006).

At the first level, ICTs are thought to influence mobilizing structures, opportunity structures and framing processes. These three factors can be further disaggregated to facilitate qualitative and quantitative analysis. For example, Mobilizing Structures can be divided into categories susceptive to the impact of ICTs: participation levels (recruitment), contentious activity and organizational issues. These categories may remain too general for the purposes of further analysis. Take, for example, participation levels; what is participation a function of? What underlying mechanisms are facilitated or constrained by the wider availability and use of ICTs? Participation levels may shift

as a function of three factors: reduction of participation costs, promotion of collective identity, and creation of community. Of course, these activities are not mutually exclusive but interdependent to a certain degree. So the categories below should not be viewed as monolithic. The McAdam, McCarthy and Zald (1996) framework is summarized in the figure below.

Do Liberation Technologies Change the Balance of Power Between Repressive Regimes and Civil Society?

Mobilizing Structures	Participation Levels	Costs | Collective Identity | Creation of Community | Micro-Contribution
	Contentious activity	Inaccurate Info | New Tactics | Adapted Tactics | Political Accountability
	Organizational issues	Hierarchies | Networks | Movement Entrepreneurs

| **Opportunity Structures** | Political Context | Political Accessibility \| Elites \| Allies \| Capacity for Repression |
| | Economic Context | Globalization \| State Regulation |

| **Framing Processes** | Mainstream Media | Bypassing State Media \| Patriotism |

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This literature review updates and builds on the one carried out by Garrett in 2006. First up are MOBILIZING STRUCTURES, which is divided into participation levels, contentious activity and organizational issues.

A) The influence of ICT on participation in social movements is potentially linked by the following three mechanisms: (i) reduction of participation costs, (ii) promotion of collective identity and (iii) creation of community (Garrett 2006). Garrett adds a fourth mechanism to the McAdam, McCarthy and Zald (1996) framework: (iv) micro-contributions. Each of these is reviewed in more detail below by drawing on the broader literature. A considerable amount of the qualitative literature focuses on the impact of ICT on participation. The section below is therefore more detailed than some of those that follow.

i) ICTs have the potential to "reduce the costs of conventional forms of participation, and to create new low-cost forms of participation, ultimately contributing to an upsurge in participation (Garrett 2006 citing Leizerov 2000). In addition, "by lowering communication and coordination costs, ICTs facilitate group formation, recruitment, and retention while improving group efficiency, all of which contribute to increasing political participation" (Garrett 2006 citing Bonchek 1997). Just as iPods and iPhones have recruited millions of new consumers, ICTs present a "recruitment opportunity [for social movements] that is largely absent from the literature" (Garrett 2006). According to Diani (2000), lowering the costs of communication means that new ICTs can provide "the largely passive support base a low-intensity forum for issue-based communication, potentially strengthening their identification with the movement" (cited in Garrett 2006).

Howard (2011) writes that, "countries where Internet access has become less costly have seen greater use and a greater number of civic groups taking to the Internet. Some groups are long-standing contributors to civic discourse; many are new and exist because the Internet has facilitated the interaction and organization of like-minded citizens" (Howard 2011). In addition, Shirky (2010) also notes that, "as the communications landscape gets denser, more complex, and more participatory,

the networked population is gaining greater access to information, more opportunities to engage in public speech, and an enhanced ability to undertake collective action." Finally, transnational social movements could not communicate as efficiently without today's ICTs since "costs and delays associated with prior communication technologies made coordinating transnational advocacy too cumbersome to be effective" (Garrett 2006 citing Diani 2000). That said, some scholars contend that ICTs are important, but not essential to contemporary transnational advocacy (Keyck and Sikkink 1998).

In sum, this argument maintains that the costs of networked communication are dramatically reduced as result of the information revolution, which suggests that social movements may be more easily mobilized to response against government repression. The argument is not only one of cost. "It isn't just that our communications tools are cheaper; they are also better. In particular, they are more favorable to innovative uses, because they are considerably more flexible than our old ones" (Shirky 2008). "As a result, larger, looser groups can now take on some kinds of coordinated action, such as protest movements and public media campaigns, that were previously reserved for formal organizations" (Shirky 2010).

For example, the new ICTs in Iran "gave social movement leaders the capacity not only to reach out to sympathetic audiences overseas but also to reach two important domestic constituencies: rural, conservative voters who had few connections to the urban chaos; and the clerical establishment" (Howard, 2010). Participation went further still since "even the most apolitical bloggers covered the demonstrations, and traffic at the dominant blogs swelled" (Howard 2011). Clearly, the disruptive use of ICTs in repressive environments is no longer the unique provenance of isolated, politically motivated hackers. It is instead deeply integrated with contemporary social movement strategy and accessible to computer and mobile phone users with only basic skills: it is a distinguishing feature of modern political communication and a means of creating the élan that marks social change" (Howard 2011). While some claim that the number of agile digital activists in countries under repressive rule are relatively low and most likely consist of the country's wealthy, urban and educated elites, "elite defection usually marks the end of an authoritarian regime" in any case (Howard, 2010).

Participation is important because of civic engagement. As Ekiert and Kubik (1999) emphasize the importance of participation in protests for the democratization that took place in Poland, the essence of which "was not an elite transaction […] It was a strong, organized, and mobilized society that forced the communist elites to negotiate their exit from state socialism and relinquish their control over the country." One of the core findings from the study is that "collective protest emerged as one of the most important forms of participation in public life and became institutionalized as a routine means of advancing grievances and pressing for policy changes" (Ekiert and Kubik 1999). An equally important finding for the purposes of this dissertation is that the number of protest events remained relatively constant while the magnitude of protests—measured by the level of participation, duration of protests and their regional scope—increased. Access to ICTs stands to increase both frequency and magnitude.

Some empirical research provides partial support to some of the qualitative research. Feezell, Conroy and Guerrero (2009) find that participation in online (Facebook) groups "strongly predicts offline political participation by engaging members online." Overall, the authors conclude that, "online groups perform many of the same positive civic functions as offline groups, specifically in terms of mobilizing political participation" (Feezell, Conroy and Guerrero 2009). The study, however, was limited to the US. Other research has found that online media use was a meaningful predictor of protest participation among college students, but that traditional media use was not. This finding suggests that, "individuals may respond in more efficacious and potent ways to online media, so much so that even behavior changes were manifest among online audiences, but not among traditional media users" (cited in Groshek 2010).

According to a meta-analysis of 38 studies and 166 effects, "the effect of Internet use on engagement is positive" although "the average positive effect is small in size" (Boulianne 2009). The analysis also finds that "increased access to a large, diverse set of political information may help reinvigorate civic life. In other words, the Internet may reduce the costs of participation (time, effort) by increasing the availability of information" (Boulianne 2009). That said, the analysis only draws on studies focused on Internet use and political engagement in the United States.

Other research, this time on access to ICTs in Burma, suggests that Internet use was associated with an increase in political awareness and participation (Digital Democracy, 2008). As Shirky (2010) argues, "in a world of low discovery costs, however, people who are about certain things can find each other and interact, away from the mass of us who just don't get it."

In contrast, some authors find the link between ICTs and participation implausible. For example, political engagement among US citizens has not changed significantly since the 1950s despite the diffusion of ICTs (Bimber 1998). "Analysis of survey data from 1996-1999 reveals little evidence of a relationship between Internet use to obtain political information and any forms of political activity" (Garrett 2006 citing Bimber 2001). However, this US example, may not apply to other contexts. In any case, research in the political psychology literature suggests that individuals have a limited capacity to absorb information. This means that, "access to more information at lower costs […] will not significantly influence participation levels" (Garrett 2006).

A related criticism about the political impact of new media is that online entertainment serves as a new form of control. A study entitled, "Opium of the Masses: How Foreign Media Can Stabilize Authoritarian Regimes," found that "East German youth who could receive Western television were, overall, more satisfied and content with the regime" than those without access Western programming (cited in Morozov 2011). Repressive regimes are "beginning to understand that online entertainment—especially spiced up with pornography—can serve as a great distraction from politics." New media and social media can serve as a form of escapism, leading to what Morozov (2011) refers to as slacktivism. "Today's battle is not between David and Goliath; it's between David and David Letterman" (Morozov 2011). "It seems fairly noncontroversial that most modern dictators would prefer a Huxleyan world to an Orwellian one, if only because controlling people through entertainment is cheaper and doesn't involve as much brutality" (Morozov 2011). To be sure, "most people simply use these tools for commerce, social life, or self-distraction, but this is common to all forms of media. Far more people in the 1500s were reading erotic novels than Martin Luther's 'Ninety-five Theses,' and far more people before the American Revolution

were reading *Poor Richard's Almanack* than the work of the Committees of Correspondence. But those political works still had an enormous political effect" (Shirky 2010). Furthermore, "this 'control by entertainment' approach is not going to work for everyone in authoritarian societies; some people already have so many grudges against their governments that flooding them with entertainment would not change their minds" (Morozov 2011).

Shirky (2010) argues that we are living an age with unparalleled "cognitive surplus." According to Benkler (2006), "some one billion people living in affluent countries have between 2 billion and 6 billion spare hours among them, every day!" (cited in Tapscott and Williams 2010). "One thing that makes the current age remarkable is that we can now treat free time as a general social asset that can be harnessed for large, communally created projects, rather than a set of individual minutes to be whiled away one person at a time" (Shirky 2010). He compares the example of LOLcats with that of Ushahidi, arguing that the billion free hours we have collectively can be used for entertainment *or* civic engagement at scales we haven't witnessed before. "The harnessing of our cognitive surplus allows people to behave in increasingly generous, public and social ways, relative to their old status as consumer and couch potatoes. The raw material of this change is the free time available to us, time we can commit to projects that range from the amusing to the culturally transformative" (Shirky 2010).

Recent research on civil resistance movements in post-Communist countries point to another argument. The state can actively seek to sever the link between ICTs and participation. "In light of electoral revolutions in Serbia, Georgia, and Ukraine, the governments in Azerbaijan and Belarus have significantly raised costs of political participation. Specifically, the coercive apparatus applied violence to prevent the permanent occupation of the public space in the wake of fraudulent elections" (Nikolayenko 2009). In Burma, the military regime has in the past dramatically increased the cost of SIM cards to mobile phones to prevent widespread peer-to-peer communication. Some authors argue that, "personal communication technologies, such as telephones and computers, can and will become centralized by governmental and/or business interests, turning them into tools for businesses and social control mechanisms for the government" (Eyck

2001). The state's capacity to repress using technologies is reviewed more closely in the section below on Political Context under the header Opportunity Structures.

In sum, "new technology enables new kinds of group-forming," which means "we now have communications tools that are flexible enough to match our social capabilities, and we are witnessing the rise of new ways of coordination action that take advantage of that change." (Shirky 2008). These social capabilities include many-to-many communication, which was not easily achieved using traditional communication technologies. Indeed, "while traditional technologies restricted our mode of communication to one-to-one and one-to-many, the information revolution has spawned "many-to-many tools that support and accelerate cooperation and action" (Shirky 2008).

ii) The promotion of collective identity is the second mechanism thought to link technology and participation. ICTs may foster the "perception among individuals that they are members of a larger community by virtue of the grievances they share" (Garrett 2006). To this end, ICTs may cultivate collective identity across a dispersed population, which organizers can then mobilize (Arquilla and Ronfeldt 2001; Myers 2000; Brainard and Siplon 2000). "Information sharing produces shared awareness among the participants, and collaborative production relies on shared creation, but collective action creates shared responsibility, by tying the user's identity to the identity of the group" (Shirky 2008). Shared awareness is "the ability of each member of a group to not only understand the situation at hand but also understand that everyone else does, too," which further contributes to collective identity (Shirky 2010). Drezner (2010) notes that "at moments when a critical mass off citizens recognizes their mutual dissatisfaction with their government, the ability of the state to repress can evaporate."

iii) Community creation is the third mechanism that ICTs can facilitate. The Internet and other ICS can help "a sense of community, through automated mailing lists that distribute announcements, online discussion forums such as chat rooms, message boards, text/instant messaging, and links to the web ring of affinity groups with like-minded objectives" (Howard 2011 citing Chen et al. 2008 ;

Weimann 2006). For example, "challenger candidates in Iran [used] Facebook to help their supporters to find a shared sense of community" (Howard 2011). The literature also suggests that ICTs "reinforce existing social networks, while simultaneously allowing them to connect with those who hold different views" (Garrett 2006 citing Norris 2004). Case studies also suggest that ICTs facilitate the cohesion of geographically dispersed networks (Elin 2003; Brainard and Siplon 2000). While some argue that, "it is unclear whether new ICTs foster stable relationships and provide an effective medium for conveying strong social pressures," Hampton (2003) has "shown that online social networks affording only weak connections can facilitate collective action" (Garrett 2006).

Gladwell (2010) disagrees. Drawing on McAdam's work, Gladwell distinguishes between "high-risk activism" (which requires "strong ties"), versus "low-risk activism" (which can succeed with just "weak ties"). By strong-ties, McAdam refers to the bonds of friendship, family, relationships, etc. These social ties appear to be a necessary condition for recruiting and catalyzing a movement engaged in high-risk activism. "What mattered more was an applicant's degree of personal connection to the civil-rights movement" (Gladwell 2010). Indeed, one is more likely to join a rally if close friends are going. "One study of the Red Brigades, the Italian terrorist group of the nineteen-seventies, found that seventy per cent of recruits had at least one good friend already in the organization," writes Gladwell (2010). Tapscott and Williams (2010) add that, "collaborative communities never get off the ground without a core group of leaders who establish the vision and community values, help manage group interactions, championing the cause, and attract more people to the ecosystem."

Homer-Dixon (2007) underscores this argument: "Extremists are often organized in coherent and well-coordinated groups that have clear goals, distinct identities, and strong internal bonds that have grown around a shared radical ideology. As a result, they can mobilize resources and power effectively." Strong ties matter. Furthermore, "disciplined and coordinated groups, whether businesses or governments, have always had an advantage over undisciplined ones: they have an easier time engaging in collective action because they have an orderly way of directing the action of their members. Social media can compensate for the

disadvantages of undisciplined groups by reducing the costs of coordination" (Shirky 2010).

Gladwell (2010) disagrees again, arguing that, "the platforms of social media are built around *weak ties*." The problem with evangelists of social media, according to him, is that they "believe a Facebook friend is the same as a real friend." In addition, while "social networks are effective at increasing participation," they only do so by "*lessening* the level of motivation that participation requires." To this end, social media may not be contributing to collective identities built on strong ties, which Gladwell (2010) argues are necessary for high-risk activism. Morozov (2011) concurs, writing that "revolutions prize centralization and require fully committed leaders, strict discipline, absolute dedication, and a strong relationships based on trust."

Howard (2011) takes issue with this claim. "Opposition campaign managers in Iran consistently say that such Internet applications allow them to get messages out as never before and thereby organize bigger and bigger campaign rallies. Without access to broadcast media, savvy opposition campaigners turned social media applications like Facebook from minor pop culture fads into a major tool of political communication" (Howard 2011). Indeed, digital technologies enabled "unprecedented activation of weak social ties," which "brought the concerns of disaffected youth, cheated voters, and beaten protesters to the attention of the mullahs. The result was a split within the ruling establishment on how to deal with the insurgency, how to proceed with counting ballots, and how to credibly authorize Ahmadinejad to take power" (Howard 2011).

Furthermore, most Iranians who took to the streets during the protests were not using Twitter. "The majority of them, however, were responding to both strong and weak network ties and to the digital technologies designed to maintain those ties (Howard 2011). To this end, "it does not matter that the number of bloggers, twitterers, or internet users may seem small, because in a networked social moment only a few 'brokers' need to be using these tools to keep everyone up to date" (Howard 2011). Such is the power of strong and weak ties in the context of

ICTs. Naturally, lower participation costs facilitates community creation. As mentioned earlier, these sub-categories are not mutually exclusive but more likely reinforcing to a certain degree.

iv) Aggregation of small, incremental contributions. Garrett (2006) adds a fourth mechanism that is largely absent from the literature. ICTs provide another recruitment opportunity by allowing "very small contributions to be effectively aggregated" (Garrett 2006). One new technology that facilitates incremental contributions is the Ushahidi platform, a free and open-source mapping and crowdsourcing tool that aggregate micro-contributions from the Web, SMS, Twitter, Flickr and other ICTs. For example, civil society groups in Egypt and the Sudan have used the platform to monitor recent elections by aggregating reports from the crowd and creating a live map of these reports. Shirky (2008) argues writes that, "new tools allow large groups to collaborate, by taking advantage of nonfinancial motivations and by allowing for wildly differing levels of contribution" (Shirky 2008). The possibility of "micro-contributions" strategies (Garrett 2006), led by "movement entrepreneurs" (Earl and Schussman 2003) can also facilitate "Smart Mobs" (Rheingold 2003) and may thus influence anti-government protests.

Movement entrepreneurs are, "motivated by individual grievances to undertake social movement activity and who rely on their own skills to conduct their actions," are becoming increasingly prevalent (Earl and Schussman 2003). The benefits of small contributions have historically been outweighed by coordination costs, but ICTs like the Ushahidi platform can lower the associated overhead. "As a result, organizations can more effectively pool small-scale acts of support" (Garrett 2006). This in part explains why some believe that new ICTs will diffuse power via mini-rebellions rather than full-out regime change and overnight transitions to democracy (Schmidt and Cohen 2010). "Taken one by one, these effects may be seen as impractical or insignificant, but together they constitute a meaningful change in the democratic process" (Schmidt and Cohen 2010).

If an individual's ability to absorb information (and not simply access information)

is a key factor limiting participation levels, then ICTs do nevertheless "afford a variety of capabilities that can be used to augment a person's ability to integrate and retain new political information, thereby facilitating increased participation" (Garrett 2006). Indeed, ICTs offer on-demand access to information, overlapping associations between materials and content can be tailored according to a range of modalities ranging from text and images, to audio and video (Garrett 2006).

B) Contentious Activity is the second factor that influences Mobilization Structures by potentially linking ICTs with social movements. An important feature of ICTs is their "ability to accelerate and geographically extend the diffusion of social movement information and of protest" (Garrett 2006 citing Myers 1994). Scholars argue that this acceleration may ultimately contribute to an intensification of conflict (although these scholars do not distinguish between violent and nonviolent conflict, nor do they disaggregate the term into event types such as protests and riots). In any case, the literature argues that ICTs may influence contentious activity via three sub-mechanisms: (i) the spread of inaccurate information, (ii) changes in repertoires of contention and (iii) increased political accountability.

  i) Today's ICTs allow information to travel faster and further than before. "The events of September 11, 2001," for example, "were reported very quickly, and not just within the online news sphere of Islamic countries—prominent news sites in China had photos and commentary online 10 minutes after the first plane hit the World Trade Center tower" (Howard 2011 citing Xu 2007). Furthermore, "news coverage of protest activity in one location can increase issue salience across a much broader region, potentially motivating future actions elsewhere" (Garrett 2006). ICTs can also accelerate the spread of inaccurate information, which could potentially catalyze a transition from protest to riot (Ayres 1999).

This acceleration in mobilization and response could ultimately contribute to an intensification of conflict. For example, the rapid dissemination of false or exaggerated information has led to violence in numerous cases including the post-election unrest in Kenya (Goldstein and Rotich 2008; see also Morozov 2011). That said, "people can also use the Internet [and other ICTs] to verify information and

check claims against multiple sources, ultimately enhancing accuracy" (Garrett 2006 citing Elin 2003). Research by Colvin (2010) and Meier (2010) support this argument. Though ICTs could still allow inaccurate information to spread, the shift from protest to riot is ultimately contingent on people's actions and a movement's discipline. (Garrett 2006).

ii) ICTs also enable activists to engage in new forms of contentious activity. This is not a new dynamic since transformations have occurred in the past. "For example, the availability and mobility of print enabled by the printing press helped move protest from transient local direct action to more flexible and sustained national contention" (Garner 1999). The comparison between the disruption brought about by the information revolution and that of "the printing press doesn't suggest that we are entering a bright new future—for a hundred years after it started, the printing press broke more things than it fixed, plunging Europe into a period of intellectual and political chaos that ended only in the 1600s" (Shirky 2008). Furthermore, "the printing press and later technologies, like the telephone and radio, did not prevent new and ever worse forms of autocracy from arising" (Ronfeldt 2009). While these technologies first undermined the power base of old monarchies, these same technologies were subsequently "turned into tools of propaganda, surveillance, and subjugation that enabled dictators to seize power and develop totalitarian regimes" (Ronfeldt 2009). To be sure, while "mass printing technologies in Europe were accompanied by a rise in civil unrest, […] the same technologies led to greater social control for China's elite" (Eyck 2001 citing Couch 1995).

The changing sets of tactics employed by activists can be observed at the level of street-based contention. These "evolving protest tactics exhibit several shared characteristics that derive, at least in part, from their reliance on loosely coupled networks of individuals and groups, which are made more feasible by new ICTs (Arquilla and Ronfeldt 2001). "In his influential work, Tilly (1978) demonstrates how it takes such macrohistorical factors as the rise of the nation-state and the emergence of new communication technologies to engender novel forms of protest. A central advantage of novel protest strategies is that they can catch the

authorities off guard and produce a stronger political impact than familiar protest tactics" (Nikolayenko 2009).

With new ICTs, "actors can mobilize rapidly and can engage in swarm-like challenges, taking simultaneous action on multiple fronts, and in multiple ways" (Garrett 2006). This was recently evidenced by student protestors who used Google Maps and mobile phones in London (Meier 2010). These new form of contentious activity is increasingly referred to as "maptivism." Technologies used for "maptivism" facilitate live tactical mapping for protest swarming. While the new technologies do expand the sets of possible tactics, others argue that creativity and innovation may be more important. In post-Communist countries, for example, "tactical innovation was vital to the success of youth movements [engaged in nonviolent resistance], especially late risers in the protest cycle" (Nikolayenko 2009).

"Electronic Civil Disobedience" and "hacktivism" are another example of tactical adaptation. These are efforts to conduct ICT-based actions consistent with the strategy and tactics of civil disobedience (Garrett 2006 citing Manion and Goodrum 2000). Given society's increasing reliance on information infrastructures, more significant disruptions using ICTs are possible (Denning 2000; Reilly 2003; Edwards 1998). However, increasing reliance on ICTs for contentious activity may also undermine social movements because "it creates new opportunities for demobilization efforts. In many cases, elites and their allies own and/or control the infrastructure on which new ICTs depend. If a particular use becomes too threatening, challengers may be denied access to resources, or a system's architecture may be modified to prevent undesirable uses. For example, if activists depend on cell phones to coordinate action, disrupting cell phone service could have a demobilizing effect" Garrett 2006).

To be sure, repressive states also leverage new technologies for tactical purposes— just as they have leveraged traditional communication technologies like the printing press, telephone, radio and television. In the case of former communist states, incumbent governments have responded to "the rise of reform-oriented and

technologically savvy youth movements by setting up state-sponsored youth organizations and intensifying the use of modern technology to subvert youth mobilization" (Nikolayenko 2009). This, of course, is just one example. But it points an important conclusion from Nikolayenko's work (2009), "both civic activists and the ruling elite are able to draw lessons from prior episodes of nonviolent resistance during a protest cycle."

To this end, the only way to stay head may be to "offense, not defense. 'If it is a cat-and-mouse game,' says Meier of Ushahidi, 'by definition, the cat will adopt the mouse's technology, and vice versa.' His view is that activists will have to get better at adopting some of the same tactics states use. Just as authoritarian governments try to block Voice of America broadcasts, so protest movements could use newer technology to jam state propaganda on radio or TV" (Dobson 2010).

iii) The adaptation of existing tactics to influence mainstream media and create more transparency is another type of contention facilitated by ICTs. New technologies provide new ways to collect information relevant to social resistance issues and generate publicity to create political pressure (Rucht 2004; Denning 2000). Human rights organizations like Amnesty International employ this approach to create more transparency. Some scholars suggest that political accountability can be increased by the ability to rapidly disseminate information (Garrett 2006, Bimber 1998). Since "democratic change can be viewed in terms of two important elements: namely, the transfer of information and its reception" (O'Loughlin et al., 1998), the influence of social media and new technologies may in part serve this purpose."

Diamond (2010) writes that new technologies like Ushahidi and FrontlineSMS are examples of "Accountability Technology" in that the platforms provide "efficient and powerful tools for transparency and monitoring." In 2009, President Obama claimed that "the more freely information flows, the stronger the society becomes, because then citizens of countries around the world can hold their own government accountable" (cited in Morozov 2011). These accountability

technologies may have a deterrence effect. "Elites are more likely to behave in a manner consistent with citizen concerns if they work in an environment where they must assume their actions are being observed and that news of any inappropriate actions—even those traditionally outside the media spotlight—will quickly reach the public" (Garett 2006). Howard (2011) agrees, writing that new ICTs "provide new capacities and impose new constraints on political actors." The literature on "sousveillance" (watching from below) also suggests that ICTs provide new means for generating political accountability (Cascio *et al.* 2007; Blatter 2008). Furthermore, ICTs contribute to "an environment characterized by more sustained activity" (Garrett 2006). In many cases, however, this increase in transparency has not had the desired impact. In Burma, for example, "all the protests and grainy photos in the world have so far done little to improve the plight of the Burmese people" (Tapscott and Williams 2010). At the same time, the information-age tactics of increasingly innovative, agile, and powerful networks of Burmese activists and their supporters have made life more difficult for Burma's dictators and inspired hope among the pro-democracy movement" (Tapscott and Williams 2010).

C) Organizational Issues contribute to the third mechanism that is thought to influence Mobilizing Structures. ICTs may facilitate collaboration between traditional organizations engaged in social movements but they may also make other kinds or organizational structures more likely. Ronfeld (2009) believes that the consequence of the information revolution may mean "greater decentralization for highly centralized organizations, and greater centralization for decentralized ones." According to Tapscott and Williams (2010), "new forms of bottom-up collaboration now rival the hierarchical organization in its capacity to create information-based products and services, and in some cases, to solve the critical challenges facing the world." But repressive regimes may not have the organizational flexibility to decentralize substantially. Meier (2010) also argues that, "rigid structures are unable to adapt as quickly to a rapidly changing environment as a decentralized system. Ultimately, it is a battle of organizational theory" (Dobson 2010). On the other hand, "new organizational forms may prove to a necessity of survival, not a source of advantage, for many social movements" (Garrett 2006; see also Meier 2007; Brafman and Beckstrom 2006; Bar-Yam 2004; Buchanan 2003). At the same time, "while it may be

true that new forms of activism are emerging, they may be eroding rather than augmenting older, more effective forms of activism and organizing" (Morozov 2011). In any case, new ICTs may support "the process of learning new approaches to political representation, of testing new organizational strategies, and of cognitively extending the possibilities and prospects for political transformation from one context to another" (Howard, 2010).

i) "The technologies facilitate the adoption of decentralized, non-hierarchical organizational forms, and make movement-entrepreneur-led activism more likely" (Garrett 2006). While networks are as old as hierarchies and markets, they are "only now coming into their own as a major societal organizing principle" (Ronfeldt 2009). Several scholars suggest that the information revolution will "contribute to a decline in the importance of hierarchical organization and established institutions" (Garrett 2006). They argue that centralized bureaucracies will be "eclipsed by networked organizational forms that they characterize as robust, adaptable, and highly maneuverable in the face of conflict" (Garrett 2006 citing Arquilla and Ronfeldt 2001; see also Brafman and Beckstrom 2006; Buchanan 2003).

During the nonviolent resistance against Milosevic, for example, student-led groups employed mobile phones and text messages extensively since the technology enabled the movement to remain decentralized albeit highly coordinated (Marovic 2007). The decentralized network prevented the regime from identifying the movement's leadership structure. This limited the government's ability to employ non-technical means for control and censorship. In another example, "when protesters in Indonesia out-maneuvered Suharto's police and ended his autocratic rule, news stories were quick to highlight the fact that email and mobile phones had significantly improved the organizational capacity of that country's democratic leaders" (Howard 2011). In other words, some scholars contend that decentralized forms of organization are particularly likely to thrive in the information revolution (Brafam and Beckstrom 2006; Diani and McAdam 2003; Rheingold 2003; Arquilla and Ronfeldt 2001, Castells 1996).

Gladwell (2010) disagrees about the impact of ICTs on organizational structure. Strategic nonviolent action requires organization, planning and authority structures. However, ICTs like those used in social media "are not about this kind of hierarchical organization." This is a "crucial distinction between traditional activism and its online variant" (Gladwell 2010). Tools like Facebook, for example, are used for "building networks, which are the opposite, in structure and character, of hierarchies. Unlike hierarchies, with their rules and procedures, networks aren't controlled by a single central authority. Decisions are made through consensus, and the ties that bind people to the group are loose. This structure makes networks enormously resilient and adaptable in *low-risk* situations" (Gladwell 2010). But digital activism in repressive environments constitutes high-risk activism. Gladwell (2010) thus maintains that the impact of ICT use by activists operating in high-risk contexts is minimal and may even be counter productive. ICTs used in social media facilitate a "form of organizing which favors the weak-tie connections that give us access to information over the strong-tie connections that help us persevere in the face of danger. It shifts our energies from organizations that promote strategic and disciplined activity and toward those which promote resilience and adaptability. It makes it easier for activists to express themselves, and harder for that expression to have any impact" (Gladwell 2010).

Furthermore, it is equally plausible that traditional organizations will employ ICTs to maintain their own organizational structure. To be sure, many elite organizations since the 1970s have realized just such a transformation (Castells 1996). Meier (2010) concurs: "New social media tools don't dictate the organizational form of the movement, they simply create more options. So a hierarchical organization can very well use new media platforms to conduct their own highly centralized movement." Drezner (2010) offers a similar conclusion, arguing that "the information revolution has lowered the organizational costs of hierarchy […]."

These elements of modern communication technology are fundamentally different from previous technologies, hence the term information *revolution*. Furthermore,

their features are compatible or symbiotic with the organizational nature of civil society groups and nonviolent movements. "Most theorists argue that the many components of global civil society are organized as a network, 'characterized by voluntary, reciprocal, and horizontal patterns of communication and exchange.' Different nodes of a network must be able to exchange information for this type of organization to be effective. The denser the organizational network, the more effective non-state actors can be" (Drezner 2006). ICTs necessarily increase the density of social networks (Shirky 2010).

Elting, Faris and Palfrey (2010) argue that "more attention should be paid to the means of overcoming the difficulties of online organization in the face of authoritarian governments in an increasingly digital geopolitical environment." The authors thus seek to distinguish between flow of information and social organization facilitated by digital tools. They argue that to understand the role of digital tools on democratic processes, "we must better understand the impact of the use of these tools on the composition and role of civil society" (Etling, Faris and Palfrey, 2010). The authors therefore qualitatively assess the influence of digital technologies on the *organizational* formations and activities of civil society groups—and in particular mobs, movements and civil society organizations.

The authors claim that, "hierarchical organizations with strong networks—the mainstay of civil society in consolidated democracies—are not a viable option in authoritarian states." Civil society organizations (CSOs) are easy targets since their "offline activities are already highly regimented and watched by the state." The authors are optimistic about smart mobs given their ability to emerge organically and take governments by surprise: "In a few cases, the ability of a mob to quickly overwhelming unprepared governments has been successful" (Elting, Faris and Palfrey, 2010). They cite the case of Estrada in the Philippines and two other anecdotes.[1]

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[1] From Shirky (2010): On January 17, 2001, during the impeachment trial of Philippine President Joseph Estrada, loyalists in the Philippine Congress voted to set aside key evidence against him. Less than two hours after the decision was announced, thousands of Filipinos, angry that their corrupt president might be let off the hook, converged on Epifanio de los Santos Avenue, a major crossroads in Manila. The protest was arranged, in

Meier (2010) cautions against romanticizing the power of spontaneous smart mob protests. He compares the use of ICTs by extremists and argues that, "successful terrorists do not spontaneously terrorize!" Elting, Faris and Palfrey (2010) do acknowledge that "poorly organized mass actions are highly unpredictable and easily manipulated." In conclusion, the authors write that success is "likely determined not by the given technology tool, but by the human skill and facility in using the networks that are being mobilized" (Elting, Faris and Palfrey, 2010). To be sure, "evidence that ICT use is producing significant social change does not mean that the changes identified are inherent to the technology" (Garrett 2006). In sum, while ICTs have "become a fundamental infrastructure for journalists and civil society groups, they are a necessary but not sufficient causal condition for contemporary regime change" (Howard 2011).

ii) Hence the likely rise in the prevalence of movement entrepreneurs (Earl and Schussman 2003) and the potential increase technology facilitated protests. ICTs might also contribute to meso-mobilizations, "the capacity to coordinate actions without an inter-organizational hierarchy" (Garrett 2006 citing Scott and Street 2000; see also Shirky 2009; Tapscott and Williams 2010). A recent example is the free and open source Ushahidi platform that was created by movement entrepreneurs in the aftermath of the Kenyan elections to raise awareness of human rights violations taking place around the country. The Ushahidi web-based interface uses a Google Maps to enable anyone with information to map incidents of violence and human rights. Incidents can also be reported via SMS, Twitter, Facebook, email, smart phone app, etc. The platform rapidly gained worldwide publicity, most recently when the technology was used in response to the elections in Egypt and the Sudan. This is just one among many examples of skilled individuals collaborating to create new technologies that may change the balance

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part, by forwarded text messages reading, "Go 2 EDSA. Wear blk." The crowd quickly swelled, and in the next few days, over a million people arrived, choking traffic in downtown Manila. The public's ability to coordinate such a massive and rapid response -- close to seven million text messages were sent that week -- so alarmed the country's legislators that they reversed course and allowed the evidence to be presented. Estrada's fate was sealed; by January 20, he was gone. The event marked the first time that social media had helped force out a national leader. Estrada himself blamed "the text-messaging generation" for his downfall.

of power, a feature of the information society identified by Benkler (2006). Lastly, a number of case studies suggest that, "ICTs make collaboration between social movements more likely" (Garrett 2006 citing Cleaver 1999; Ayres 1999; Tapscott and Williams 2010; Shirky 2008; Shirky 2010).

2] Opportunity Structures.

This is the second factor thought to link ICTs and social movements. According to McAdam (1996), the four dimensions of political opportunity structures are (i) the relative accessibility of the political system; (ii) the stability/fragmentation of alignments among elites; (iii) the presence of allies; and (iv) the state's capacity and propensity for repression. In other words, opportunity structures are "attributes of a social system that facilitate or constrain movement activity," since they "shape the environment in which activists operate, and activists must take them into account when crafting actions" (Garrett 2006). Clearly, these factors are especially salient in repressive environments.

a) Political structures of opportunity. According to Garrett (2006), "a nation's opportunity structures are strongly influenced by international events and alignments." The potential for "information cascades" is relevant in this respect since they can be reversed as a result of an external event. "An informational cascade takes place when individuals acting in an environment of uncertainty strongly condition their choices on what others have done previously. More formally, an information cascade is a situation in which every actor, based on the observations of others, makes the same choice independent of his/her private information signal. Less formally, an information cascade demonstrates the power of peer pressure—many individuals will choose actions based on what they observe others doing" (Drezner 2010). But external shock to the system such as an election or natural disaster can *reverse* an information cascade.

These events can "trigger spontaneous acts of protest or a reverse in the cascade," especially since "a little bit of public information can reverse a long-standing informational cascade that contributed to citizen quiescence" (Drezner 2010). In other words, "even if people may have previously chosen one action, seemingly little

information can induce the same people to choose the exact opposite action in response to a slight increase in information" (Drezner 2010). Morozov (1999) disagrees: "information cascades often fail to translate into crowds, even without state fear-mongering." Still, Drezner (2010) maintains that, "the spread of information technology increases the fragility of information cascades that sustain the appearance of authoritarian control. This effect creates windows of opportunity for civil society groups" (Drezner 2010). Howard (2011) agrees, noting that while "new information technologies do not topple dictators; they are used to catch dictators off-guard."

While such opportunities may be short-lived, this is not be particularly problematic since social resistance groups and nonviolent movements seek to operate on maintaining tactical a advantage by seeking momentary windows of opportunity to act. While this has always been true, the information revolution and associated diffusion of ICTs does influence the types of tactics used and their effectiveness as outlined above. Furthermore, the use of ICTs means that such movements can be organized far more efficiently and rapidly than in the past. As Garrett suggests, "the capabilities available to those who *temporarily* evade efforts to control the flow of information online are more important than the dream of unchallenged regulatory freedom (2006).

On the other hand, "even if [government] measures are not 100% effective, their enactment affects the cost/benefit analysis of individuals seeking to use the Internet [and other ICTs] as a means of acquiring officially frowned upon content" (Drezner 2006). To be sure, "if governments can raise the cost of Net [or mobile] transactions, they can regulate [these] transactions" (Goldsmith 1998). Citizen coordination and mobilization is particularly unlikely when governments control transaction costs (in multiple senses of the word) effectively and the public is risk-averse. At the same time, however, an exogenous shock that triggers spontaneous acts of protest can also reverse citizen acquiescence and lead to smart mob behavior (Drezner 2006; Rheingold 2003). The spread of ICTs may thus increases the probability of smart mob behavior, which may provide windows of opportunity for social resistance movements to take advantage of momentary political opportunities.

The following four points identify political structures that influence the motivation factor just described. The next points identify economic structures of opportunity.

i) The accessibility of the political system in the context of coercive states is by definition highly limited. This necessarily reduces the public space for protests and other forms of resistance. For example, accessibility in North Korea is virtually impossible save for the very small number of elites. While the political system in Burma is also closed, the regime's information blockade and reign of terror is not as effective but still limits access to the political system. The same is true of Egypt where most political action occurs on Facebook rather than in the streets.

ii) In addition, the alignment among elites in coercive states tends to be particularly stable. At the same time, nonviolent action is aimed precisely at dividing these power alignments, which presupposes that power is not a monolithic entity. Nonviolent action views power as pluralistic which means that "loci of power" provide a countervailing force against the power of the authoritarian ruler, especially when the loci are numerous and widely distributed throughout society (Martin 1989; Sharp 1973).

iii) Coercive states generally have important allies. Egypt, Iran and Sudan have important alliances with the US, Russia and China, respectively. The latter's foreign policies do influence the accessibility of the political system within the former countries as evidenced by voting patters in the Security Council. Some activists thus charge that "One cannot take seriously the United States or any other Western government that funds [online] political activism by young Arabs while it simultaneously provides funds and guns that help cement the power of the very same Arab governments the young social and political activists target for change" (cited in Morozov 2011; see also Gharbia 2010). These alliances tend to be durable and stable. In addition, there is increasing evidence that repressive regimes are exchanging not only best practices in digital repression but also the underlying customized software for surveillance and censorship (Morozov 2011).

iv) That a repressive regime has the capacity and propensity for repression goes without saying; although capacities do not necessarily remain constant or uniform over time. The widespread use and availabilities of ICTs could certainly empower coercive regimes at the expense of resistance movements (Morozov 2011). In addition, "extremists, criminals, terrorists, and hyper-nationalists have embraced the information society just as eagerly as classical liberals" (Drezner 2010). This is hardly news, however. In a 1998 study on the Internet and Political Control, Rodan notes that "when the political will to obstruct certain information and views is coupled with such variables as an efficient and technically competent bureaucracy, an established regime of political intimidation and surveillance, and embedded corporatist structures facilitating cooperation between state officials and administrators across the public and private sectors, you have a formidable mix." Almost 20 years earlier, Daniel Bell (1979) warned that, "the new revolution in communications makes possible both an intense degree of centralization of power, if the society decides to use it in that way, and large decentralization because of the multiplicity, diversity, and cheapness of the modes of communication" (cited in Ronfeldt 2009).

Garrett rightly shares Eyck's (2001) concern that, "activists are not the only group capable of using technology to become more fluid and flexible" (2006). To be sure, "citizens are not the only ones active in cyberspace. The state is online, too, promoting it's own ideas and limiting what the average user can see and do. Innovations in communications technology provide people with new sources of information and new opportunities to share ideas, but they also empower governments to manipulate the conversation and to monitor what people are saying" (Bremmer 2010). For example, a Russian think tank has set up a "Kremlin School of Blogging" while the communications ministry is soliciting proposals to "advance Russian interests on social networks" (Morozov 2009). In addition, the Kremlin has "increased its spending on the online-only-state-owned media by 75 per cent" (Morozov 2009). Meanwhile, "the Bureau for the Development of Religious Web Logs offers blogging workshops to Iran's clerics" and "even the Revolutionary Guard developed a strategy to generate 10,000 blogs, though the Basij militias have not proven up to this particular task" (Howard 2011).

Furthermore, the government's security apparatus leveraged both Twitter and Facebook to spread disinformation almost as soon as protestors took to the streets with the same tools (Howard 2011). In Belarus, "street protests (arranged in part by e-mail) against President Aleksandr Lukashenko's alleged vote rigging swelled, then faltered, leaving Lukashenko more determined than ever to control social media (Shirky 2010).

There is no doubt that authoritarian regimes also benefit from the information revolution since they gain access to increasingly sophisticated tools with which to censor and control digital information (Diebert *et al.* 2008). Drezner (2010) writes that the Internet has allowed repressive regimes to scale their monitoring and surveillance efforts, making it "easier for the state to anticipate and regulate civic protests." The government of China, for example, has developed a $700 million firewall, the Great Firewall, to monitor and censor all Internet communication inside the country (August 2007). More recently, Beijing launched the GreenDam project which sought to install surveillance and censorship chips on all computers in China (Morozov 2011). In Iran and Thailand, the government shut down the network during days leading to and/or following the elections in order to curb the potential of smart mob behavior. The Iranian government also "began jamming the frequencies of Farsi-language satellite broadcasts from the BBC and Voice of America as well," and one month after the disputed elections, "the Iranian Parliament began debate on a measure to add websites and blogs promoting "corruption, prostitution and apostasy" to the list of crimes punishable by death" (Howard 2011). In Azerbaijan, the government installed five hundred webcams at voting stations prior to the country's elections (Morozov 2011). Meanwhile, China has installed some 60,000 cameras in Urumqi, the capital of Xinjiang Province (Morozov 2011).

Furthermore, coercive governments have resort to both technical *and* non-technical means of control, namely fear and intimidation as evidence by numerous cases ranging from China to Iran. "In some ways the [Iranian] regime's response [to the 2009 election protests] was decidedly old media: expelling foreign correspondents, blocking phone lines, preventing the publication of daily newspapers, and accusing enemy governments of spreading misinformation" (Howard 2011).

Diamond (2010) writes that, "democrats and autocrats now compete to master these technologies. Ultimately, however, not just technology but political organization and strategy and deep-rooted normative, social, and economic forces will determine who 'wins' the race. Clearly, technology is merely a tool, open to both noble and nefarious purposes. Just as radio and TV could be vehicles of information pluralism and rational debate, so they could also be commandeered by totalitarian regimes for fanatical mobilization and total state control. Authoritarian states could commandeer digital ICT to a similar effect. Yet to the extent that *innovative* citizens can improve and better use these tools, they can bring authoritarianism down—as in several cases they have" (Diamond 2010). It is also worth noting that in some cases, government "censors often seem one step behind and reactive, developing restrictions in response to creative maneuvering by citizens armed with mobile-phone cameras, portable flash drives, and basic knowledge of how to use free internet tools" (Howard 2011).

Technology certainly exists for states to monitor and censor information communication. Indeed, "technologies widely thought to be inherently democratic are often programmed, designed, and built (whether successfully or not) to maintain lines of strong authority" (Price 2002). However, technological innovation is not static, nor is tactical learning and innovation. SMS encryption, for example, is now available to private sector companies and individuals alike. As businesses demand increasingly secure communications, this creates a market for technological solutions. In terms of tactical innovation, the use of "beeping", i.e., calling a phone and using the number of rings to communicate a particular message. Take Iran as another example, the Berkman Center (2008) reports that "satellite TV, Internet based radio stations, cell phones, and other Internet based tools are difficult if not impossible for the regime to control. Costs are generally high for regimes that limit access and connectivity. The Internet will not lead automatically to liberal, open public spheres in authoritarian regimes, but it will make it harder to control and more costly for authoritarian states to do so."

McAdam's framework suggests that opportunity structures in coercive states are vey much closed. However, this does not mean that an oppressed population is

necessarily passive and fully obedient. As McGlinchey (2009) notes in the context of Central Asia, "new ICTs hold the potential to transform the region's political culture from one that abides authoritarian rule to a culture that embraces political reform." To this end, while "the causal effects of new ICTs are mixed and highly dependent on structural context, the use of new ICTs nevertheless does appear to have a liberalizing effect on political culture." Furthermore, repressive policies may reinforce the shared discontent across social networks while ICTs may very well create new opportunity structures for social resistance. To be sure, repression can sometimes lead to greater movement mobilization (Hess and Martin 2006). In short, repression may backfire. On a related note, the use of force (or legal measures) by repressive regimes to curb access to ICTs clearly reveals that said regimes feel threatened by new technologies. Indeed, "authoritarian governments stifle communication among their citizens because they fear, correctly, that a better-coordinated populace would constrain their ability to act without oversight" (Shirky 2010).

In sum, several scholars argue that coercive governments increasingly have the upper hand in controlling and suppressing politically sensitive information (Morozov 2011; Cherian 2008; Deibert *et al*. 2008; Oates 2008; Singel 2008; Zittrain 2008; Mydans 2007; Goldsmith and Wu 2006; Lessig 2006; Drezner 2004; Kalathil and Boas 2003; Hermida 2002; Price 2002). Others argue that, at least in the short to medium term, the spread of the Internet will tend to benefit authoritarian regimes at the expense of dissidents and pro-democracy activist (Chase and Mulveron 2002). This was not the case in earlier studies, which suggested that the information revolution and the Internet in particular would lead to more open and democratic societies (Kidd 2003; Scott and Street 2000; Andrew 2000; Clarke 1994). Still, some scholars such as Howard (2011), Shirky (2010), Diamond (2010), Meier (2010), Ronfeldt (2009) and McGlinchey (2009) express cautious optimism.

b) Economic structures of opportunity. The literature provides two additional claims regarding the relationship between ICTs and opportunity structures. One emphasizes the impact of globalization and the information economy. The other addresses the influence of state regulation and technical knowhow. These two points are addressed in more detail below.

i) The first claim suggests that global economic processes and ICTs "foster transnational activity, including contention, and this ultimately influences national-level political opportunity structures" (Friedman 2000; Ayres 1999; Sassen 1990). For example, an authoritarian state that wishes to exploit the economic possibilities of the information revolution will have to make increasingly difficult choices: "any state that permits Internet or cellular phone use for commercial possibilities will face difficulties in perfectly censoring undesirable communication or halting all attempts at political coordination" (Drezner 2006). This is the classic "dictator's dilemma" (Burkhart and Older 2003), one of the more popular Internet-causal theories of democracy. The concept is "founded on the idea that globalization and globalized markets—largely facilitated and accelerated by the Internet—force governments to keep their countries' communication borders open" (Best and Wade, 2009).

For example, one of the reasons why the Chinese government has to "allow some exceptions to its control efforts—even knowing that many Chinese citizens will exploit the resulting loopholes" is to "keep China in business" (Fallows 2008). For example, "many of China's banks, foreign businesses and manufacturing companies, retailers, and software vendors rely on virtual private networks (VPNs) and proxy servers […] to survive" (Cuttler 2008). VPNs and proxy servers also happen to be the two dependable alternatives to evading government censorship. "This is the one area in which China literally cannot afford to crack down. Foreign companies are the backbone of its export economy, and without VPNs they just couldn't do their work" (Fallows 2008).

The same may be true of other ICTs such as mobile phones and SMS text messages. More than 20 million SMS messages are sent every day in Iran alone. This clearly reflects people's desire to communicate. Furthermore, "as each new technology has spread, the region's authoritarian governments have tried to fight back. They have sent censors to license fax machines and block dissident Web sites, and they have pushed government-friendly investors to buy and manage satellite channels. But the Gulf's monarchies have not yet figured out *whether* or how to control text message channels. If they do, they will sorely disappoint the

region's profit-engorged cell phone companies, whose stock prices have soared as phone and messaging use has exploded. About 55 percent of Kuwaitis and a third of Saudis now own cell phones, according to mobile service providers, and growth rates show no sign of slacking" (Coll 2005).

As a result, "a nation's opportunity structures are strongly influenced by international [and regional] events and alignments" (Garrett 2006). In Sum, network traffic in and out of a country can sometimes be stopped by disabling the Internet exchange points in port cities, but doing so can have broader consequences for the national economy, constraining the capacity of the state organization itself" (Howard 2011). To this end, "In the pursuit of the economic benefits of either using ICTs to improve their state capacity or building a high-tech sector for their economy, even the most authoritarian states make policy trade-offs that create the conditions for transparency and accountability. In important ways, these decisions are not ones made by ruling elites, but by upper level bureaucrats with training in information management. And ultimately, reforming technology policy has immense implications for other political actors, particularly parties, journalists, and civil society groups" (Howard 2011). Furthermore, "it appears that state investment in information infrastructure, even to improve its own bureaucratic capacity, may also be one of the key ingredients for contemporary democratization" (Howard 2011).

At the same time, however, these ICTs are not impervious to control and monitoring. Mesquita and Downs (2005) argue that repressive states "have learned how to stifle the bottom-up democratic potential of the Internet and still promote economic growth, contrary to Kedzie's (1997) dictator's dilemma argument" (Best and Wade, 2009). To this end, it's "becoming clear that authoritarian governments can and will develop sophisticated information strategies that will allow them to sustain economic growth without loosening their grip on the Internet activities of their opponent" (Morozov 2011). The government of Sudan, for example, regularly shuts down the mobile phone network, with little impact to its oil-fueled economic. "And they do not have to cut off the entire country; it's possible to disconnect particular geographic regions or even parts of the city. For example, during the unsuccessful color revolution in Belarus in 2006, the authorities turned

off mobile coverage in the public square where protesters were gathering, curbing their ability to communicate with each other and the outside world" (Morozov 2011). In sum, "when forced to choose between a blackout and a coup, many choose the former" Morozov 2011).

Shirky (2010) argues that the astonishing fall of communism presents an important case study to understand the dual role that economic factors and technology can play in the collapse of a regime. Despite considerable US investment in "a variety of communications tools, including broadcasting the Voice of America radio station, hosting an American pavilion in Moscow […] and smuggling Xerox machines behind the Iron Curtain to aid the underground press, or samizdat […], the end of the Cold War was triggered not by a defiant uprising of Voice of America listeners but by economic change" (Shirky 2010). Indeed, "one could argue, the ability of citizens to communicate, considered against the background of macroeconomic forces, was largely irrelevant" (Shirky 2010). That said, ICTs still facilitated the widespread dissemination of information which meant that "the political and, even more important, economic bankruptcy of the government was no longer an open secret but a public fact. This made it difficult and then impossible for the regimes to order their troops to take on such large groups" (Shirky 2010). In sum, "communications tools during the Cold War did not cause governments to collapse, but they helped the people take power from the state when it was weak" (Shirky 2010).

ii) The second claim is made in relation to regulation, or lack thereof. "ICTs, especially the Internet, offer a mode of communication that is fundamentally resistant to state regulation, reducing a state's capacity for repression by hindering its ability to control the flow of information and political communication" (Garrett 2006). Of course, the ability to circumvent government censorship and regulation are important but "historical accounts suggest that these capacities can be effectively curtailed" (Garrett 2006). This is particularly true in contexts where telecom companies are state owned since, i.e., when states and telecoms are essentially one institution (Obadare 2005; Wolfsfeld 2003). The regulation of ISPs is another way for repressive regimes to keep the reigns on information access. Indeed, "ISPs are commonly contracted to help the state preserve moral order,

which is often defined by political elites and implicitly means preserving the existing political order" (Howard 2011). "Certainly the state can control cultural consumption online through technology and spectrum licensing, ownership of the telecommunications provider and Internet exchange points, pricing structures, and the political application of security and decency laws" (Howard 2011). In sum, "just as autocracies can control printing presses, radio and television, so too can savvy authoritarian governments monitor and exert control over new telecoms and Internet service providers. Moreover, even absent such control, new ICTs need not be liberalizing" (David Hill and Khrishna Sen 2000).

3] Framing Processes.

The third factor in the overall framework comprises "strategic attempts to craft, disseminate and contest the language and narratives used to describe a movement. The objective of this process is to justify activists' claims and motivate action using culturally shared beliefs and understandings" (Garrett 2006 citing Zald 1996). For example, "the real contribution of Facebook groups to the democratization of Morocco may lie in pushing the boundaries of what can and cannot be said in this conservative society rather than mobilizing street protests" (Morozov 2011). Indeed, "it used to be that these cultural elites were able to define public opinion. Now there are mechanisms for at least allowing some contrasts and divergence of opinion. The Internet and mobile phones, in some modest respects, have freed public opinion from being narrowly constituted as the opinion of a small elite" (Zayani 2008).

There are, of course, "moderating conditions of governmental regulation and censorship that limit civil liberties and other freedoms of expression online" (Best and Wade, 2005). "Moreover, a 2009 study found that Microsoft has been censoring what users in the United Arab Emirates, Syria, Algeria and Jordan could find through its Bing search engine much more heavily than the governments of those countries" (Morozov 2011). Indeed, even when communicative technologies are socially widespread, mass media often support the economic, political, social, and ideological institutions of which they are a part" (Groshek, 2010).

The ability to bypass mass state media is "amongst the most discussed changes associated with new ICTs" (Garrett 2006). New technologies have dramatically reduced the required resources to bypass state media. In addition, activists increasingly employ ICTs to "gain access to the established media outlets" (Garrett 2006 citing Wray 1999). When traditional media is not state owned, opposition groups can more effectively influence framing processes since the need to bypass state media would ultimately be less pressing (Wolfsfeld 2003). As such, "information available online is less likely than other mass media formats to conform to the prevailing national-level ideological and hegemonic structures, because the *potential* for nearly anyone to participate and contribute in an online environment is much greater than it has been with other, more traditional media" (Groshek 2010). On the other hand, the state can employ ICTs to effectively frame movements as unpatriotic, thereby undermining widespread support for anti-government demonstrations.

i) To this end, "new ICTs can be an effective tool for generating publicity and news coverage" (Garrett 2006). Indeed, "activists who provide information in a format that is easy-to-use and easily verified are more likely to have their views and interpretations presented alongside those forwarded by elites" (Garrett citing Ryan 1991; Vegh 2003). To be sure, "Internet users in a country have actually helped frame local events" (Howard 2011). In Iran, for example, "Mousavi's use of digital campaign tools was a strategic response to his exclusion from coverage by state-run television and newspapers" (Howard 2011). "In times of political crisis, social elites often do have access to information technologies that can channel news and perspectives from multiple domestic and international sources, and for better or worse it is these social elites who often constitute civil society and are key actors in domestic political affairs" (Howard 2011). For example, evidence of human rights abuses committed by states such as Burma and China do not end up on Ushahidi, iReport, Global Voices, Youtube and The Hub for purely domestic consumption but rather for the purposes of international advocacy. Indeed, the sites just listed are often blocked in countries with repressive regimes.

It stands to reason that if left unchecked, the state would "prefer to have a monopoly over media imagery than to have such critical tools in the hands of others" (Price 2002). This monopoly provides the state with the capacity to "maintain control over

identity-related media and to have some influence over the mixture of language and imagery that is a significant aspect for the binding nature of the nation-state" (Price 2002); framing processes, in other words. Regulatory measures can also be used as a pretext for additional state control, which, some believe tends to crowd out the possibility for economic windows of opportunity.

ii) New ICTs can be used by coercive states to rouse patriotism among its population. "Nationalism […] is going through a major revival on the Web" (Morozov 2011). Indeed, the Chinese government employed this tactic effectively vis-à-vis Tibet and the Beijing Olympics. "The use of text messaging for propaganda purposes—known as "red texting"—reveals another creative streak among China's propaganda virtuosos" (Morozov 2011). In Saudi Arabia, the regime "uses ICTs to brand itself online as the center of Islam, the home of Mecca, and the source of Islamic exegesis. It uses ICTs to protect the ruling family's control over both economic resources and politics" (Howard 2011). Morozov (2011) argues that "nationalism and the Internet are something of natural allies."

Clearly, repressive states have recourse to framing certain issues as a question of patriotism for the purposes of propaganda, which may effectively undermine support for social resistance movements (Morozov 2011). "In these states, new information technologies are heavily regulated and used by the state as a means of spreading propaganda" (Howard 2011). To be sure, "in such countries, new media technologies are closely regulated, if not banned or directly owned by ruling families or administered by the state. This effectively prevents other sources of cultural and political authority from any mechanism of disseminating news, information, or other cultural content (Howard 2011).

In sum, framing processes in contexts of antagonistic state-society relations can aimed at both an international and domestic audience. Clearly, ICTs can and do play a fundamental role in getting the word out to the international community. However, whether the audience remains passive or becomes actively engaged will partly be a function of the frames chosen to justify the social movement in combination with the state's ability to frame issues as questions of patriotism. In either case, ICTs provide a

means to communicate such narratives in multiple modes ranging from text and pictures to audio and video. The rise of Web 2.0 and thus user-generated content is allows for more flexible and dynamic framing as well as rapid dissemination.

2.2: Discussion

This section discusses the findings from the critical review of the macro-level, quantitative analyses and micro-level, qualitative studies cited above. The purpose is to consolidate these findings and inform the development of quantitative and qualitative framework to assess whether liberation technologies change the balance of power between repressive regimes and civil society.

The meta-analysis of the quantitative literature provides decidedly mixed results, with some studies identifying statistically significant relationships between technology and democracy, and others not. The most important limitation of the data-driven studies reviewed are that: (1) the data analyzed typically goes through 2003, well before the Web 2.0 revolution; (2) the analysis tends to focus on the impact of the Internet or mobile phones, but not both; (3) the studies tend to aggregate data on democratic and authoritarian states, thus running the risk of not capturing more subtle effects regarding the impact of ICTs on repressive regimes. The first limitation is perhaps the most serious. Major social media platforms are still very new even if they are rapidly growing in use and membership. Twitter was first launched in 2006, but is only now beginning to be employed by civil society groups in repressive environments. Collectively, Facebook, YouTube, and Flickr are only about five years old. The study by Howard (2011) is the only one that uses data through 2008. As Shirky (2010) rightly notes, we should assume that the impact of new ICTs "will be incremental and, unsurprisingly, slowest in the most authoritarian regimes."

To be sure, these tools are still more widely used use in the West than in countries with repressive regimes. Of course, this is in part due to the fact that the latter seek to prevent access to Web 2.0 platforms, but this is simply proof that a critical mass of Web 2.0 users can challenge the balance of power and pose a threat to authoritarian states. In addition, none of the studies reviewed focus exclusively on authoritarian states, nor do they

control for election years and internal wars, which may have an important influence on the use of ICTs. Most of the studies also employ aggregate measures of democracy for their dependent variable, which requires a number of broader assumptions to be made and limits the specificity of the conclusions that can be derived from the analysis. Indeed, democratic consolidation is a "complicated process, in which historical legacies and popular actors play a significant role" (Ekiert and Kubik 1999).

In addition, "many of the traditional statistical techniques do not lead to conclusions about causal connections. Instead, they lead to models of 'explained variation,' a different thing altogether. To explain the variation in a range of country experiences, researchers often have to pool data from multiple years, artificially expanding the number of case studies they have so that the assumptions of traditional statistical methods can be met" (Howard 2011).

In terms of data, one would ideally want to draw on data from 1994 through to at least 2014 to really capture the potential impact of Web 2.0 platforms and mobile phones in countries with repressive regimes. Time series data on the number of mobile phone calls, text messages, smart phone users, Facebook users, Twitter users, YouTube users and Flickr users per year (or even weekly) would also make for ideal independent variables for the kind of disaggregated statistical analysis needed since it is already "particularly challenging to disentangle political, social and technology factors" (Diamond 2010).

As for the dependent variable, the Meta-Activism Project (MAP) is currently developing a Global Digital Activism Dataset (GDADS) with Ethan Zuckerman, Clay Shirky and Patrick Meier serving as advisors. Launched in 2010, this data development initiative aims to provide micro-level event-data on digital activism activities between 1982 and 2010. Unfortunately, GDADS will not be available until the end of 2011 and the independent variables listed above are particularly difficult (some perhaps impossible to acquire) since much of this data is proprietary. Most problematic, however, is the simple fact that data beyond 2010 is inherently not available.

The qualitative literature, while more voluminous than the statistical studies, is not

particularly conclusive either but often more riddled with anecdotes or one-off case studies. In addition, qualitative case studies tend to rely on a number of hypothetical assumptions based on conceptual theories often driven by hype than empirical evidence. But perhaps the most serious weakness in the qualitative literature is the issue of sample bias and extensive use of anecdotes rather than in-depth comparative, qualitative case study analysis. Furthermore, "while single case studies help generate theories about the importance of ICTs in democratic transitions, such theories cannot be meaningfully tested on a single case alone. When such detailed causal theories are transported to other countries, invariably some factors lose relevance, and new factors seem important" (Howard 2011). Other weaknesses from the qualitative research are listed below:

- First, the terms "information revolution" and the "Internet" are used interchangeably throughout the literature even though the former includes additional means of communication, such as mobile phones. To be sure, the information revolution is a function of breakthroughs in innovation and the evolving nature of competition in the telecommunication sector. The political science literature focuses almost exclusively on assessing the effect of the Internet instead of evaluating the aggregate impact of the information revolution on antagonistic state-society relations.

- Second, the two terms are purposefully not differentiated on the basis that the predominant feature of the information society is the spread of the Internet (Drezner 2006). While this is true of the most industrialized democratic societies, it is not the case for the majority of developing countries with repressive regimes. Indeed, mobile phones are the most widely spread ICT in developing countries (UNCTAD 2008), and also the technology of choice for activist networks in these regions (Zuckerman 2007). Yet, the political science literature is still biased towards assessing the political and legal ramifications of the information revolution in industrialized societies. This explains the literature's bias towards the Internet.

- Third, the political science literature duly argues that coercive governments have recourse to non-technical means of information control such as intimidation and

imprisonment. This argument is articulated to suggest that repressive regimes have the advantage of employing corporeal means to enforce information control and maintain an upper hand in the information revolution. However, there is a very rich literature on nonviolent action, which suggests that social resistance movements also have recourse to non-technical means, or tactics, to effectively counter government crackdowns (Stephan and Chenoweth 2008; Popovic 2006; Stephan 2005; Schock 2005; Sharp 2005; Helvey 2004; Ackerman and DuVall 2000; Zunes *et al*. 1999). At the same time however, a notable gap exists in the nonviolence literature vis-à-vis the recent and current use of ICTs in nonviolent movements. The only systematic study carried out on the role of technology in nonviolent action is by Martin (2001). This review has yet to be updated in any comprehensive way. Furthermore, the majority of Martin's references date from the early 1990s or earlier, i.e., during the very onset of the information revolution. In sum, both literatures have important gaps that challenge the accuracy of the conclusions formulated in the current debate on the impact of the information revolution on authoritarian rule and social resistance.

- Fourth, while the social movement literature "articulates the mechanisms by which new technologies are linked to social movement outcomes, these accounts still take on a deterministic hue. The analyses tend to frame socio-technological change in terms of static capabilities used in predictable ways" (Garrett and Edwards 2004). The impact of the information revolution on social resistance needs to be disaggregated into factors that affect the *how*, *when* and *why* of interaction between ICTs and social movements. In other words, more fine tuned process tracing is in order since the literature tends to treat the interaction as a black box (Kalathil and Boas 2003). These factors include ongoing technological innovation, user practices, technical competence and organizational routines (Garret and Edwards 2004). The social movement literature has at times ignored these factors, which has lead to "specific mischaracterizations of socio-technical change that result from their exclusion" (Garret and Edwards 2004).

- Fifth, the sociology, political science and communication literatures have each addressed the impact of ICTs on authoritarian rule and/or social resistance. While the diversity of perspectives enriches the debate, there is little evidence of

any serious cross-disciplinary research that seeks to connect the findings from these various disciplines. In fact, "few works are commonly cited across the field, and most are known only within the confines of their discipline. The absence of a common set of organizing theoretical principles can make it difficult to find connections between these disparate works beyond their common subject matter. The scholarly community would benefit from a broader view of the field" (Garrett 2006). In short, "the independent role of information technologies on political protests has not been well studied" (Eyck 2001).

- Sixth, the literature on the impact of the information revolution on state-society relations within the context of repressive regimes and social resistance is overwhelmingly qualitative. Apart from Eyck's 2001 study (which only focused on technology in the 1970s) and there don't appear to be other large-N quantitative studies on the impact of information communication technology on resistance in general, and protests in particular. To this end, this dissertation will contribute to the literature by carrying out the first large-N quantitative study on this question. This will provide the literature with more data-driven and empirical analysis, which has thus far been lacking.

- Seventh, the current literature does not emphasize the use of network theory as a theoretical framework. "Most studies in this vein look at how involvement in networks affects individual behavior. It is much rarer that the overall configuration of networks linking individual activists is assessed in order to evaluate the potential for collective action in a given collectivity" (Diani 2003). While other conceptual frameworks from political science, economics and sociology are more frequently employed to frame the research methodology and design, the added value of network science is rarely considered—let alone pursued. "But it is the networked design that is a distinguishing feature of social media that will be ever more threatening to authoritarian rule" (Howard 2011). This is problematic since the evolutionary dynamic of adaptation and learning described above is a dynamic inherent to all networks in complex adaptive systems (Buchanan 2003; Nohria and Eccles 1993). Furthermore, since network typologies describe the organizational characteristic of nonviolent movements and smart mob behavior, network science can provide a rich and fertile

theoretical framework to assess the theoretical impact of the information revolution on repressive regimes (hierarchical & centralized organizations) versus social networks (horizontal & decentralized organizations). To this end, the theoretical framework can serve to refine the research questions, identify the appropriate variables and to inform the formulation of the research hypotheses (Brafam and Beckstrom 2006, Arquilla and Ronfeldt 2001, Castells 1996).

2.3: Conclusion

Do liberation technologies change the balance of power between repressive regimes and civil society? As Howard (2011) notes, "There are several methodological approaches to answering this question: a quantitative approach using large-N datasets and statistical tools that demonstrate how variation in democratic outcomes are correlated with variables that serve as proxies for theoretically interesting explanatory factors; a qualitative and comparative approach using specific cases and narrative arguments that trace out causal connections in a more direct and nuanced manner." This Chapter has thus reviewed the macro-level quantitative and micro-level qualitative literatures. This critical review has shown that both literatures are limited in many respects.

The main weakness of quantitative studies is that they are typically based on datasets that don't span beyond 2003. These studies also fail to assess the combined impact of the Internet and mobile phones on democratization or protest frequency. In addition, the studies tend to aggregate data for both democratic and authoritarian states. "Large-scale, quantitative, and cross-sectional studies must often collapse fundamentally different political systems—autocracies, democracies, emerging democracies, and crisis states—into a few categories or narrow indices" (Howard 2011). The use of aggregate democracy measure or indexes as a dependent variable also limits the conclusions that can be drawn from the results of statistical analysis. Indeed, efforts to explain the impact of ICTs are "often least convincing when they are reliant on traditional statistical modeling techniques and large aggregated datasets which explain variation in a sample but do not reveal causal recipes" (Howard 2011). Meanwhile, the main weakness of the qualitative literature is the heavy reliance on theoretical models than empirical data. Many qualitative studies are focused on the analysis of single cases, the findings of which are not necessarily verifiable. "Area studies that focus on one or two countries get

at the rich history of technology diffusion and political development, but rarely offer conclusions that can be useful in understanding some of the seemingly intractable political and security crises in other parts of the world" (Howard 2011). These studies also don't capture change over time or focus on recurring events such as contested elections that can be repeatedly observed for research purposes and hypothesis testing.

The main drawback of both literatures as that they are either focused on quantitative analysis or qualitative analysis. Very few actually combine quantitative and qualitative methodologies as part of their research design. In sum, while some "research on the impact of new information technologies in the developing world is becoming ever more sophisticated," much of the literature is still "encumbered in three ways: a focus on metrics, indicators, and digital artifacts over theories and explanations; more exuberance about potential social transformation rather than understanding observed changes; and the urge to periodize digital-divide scholarship" (Howard 2011).

This dissertation will therefore draw on Lieberman's (2005) mixed-method strategy for comparative research. This unified approach combines statistical analysis with intensive case-study analysis. "Not only are the advantages of each approach combined, but also there is a synergistic value to the nested research design: for example, statistical analyses can guide case selection for in-depth research, provide direction for more focused case studies and comparisons, and be used to provide additional tests of hypotheses generated from small-N research" (2005). The large-N quantitative analysis will aid the process by which the case studies are selected.

The mixed-methods approach begins with a preliminary "large-N" analysis to test for a statistically significant relationship between dependent and independent variables. The quantitative analysis carried out for this dissertation will test whether increased access to information and communication technologies is a statistically significant predictor of anti-government protest events in countries under repressive rule. The dependent variable is therefore "protest events" while the independent variables will include a list of technology variables such as number of Internet users, mobile phone users, etc. The econometric analysis will control for traditional factors known to influence protest frequency as identified in the literature review above.

The analysis will first cluster repressive regimes into one of four quadrants. High and low mobile phone use versus high and low protest events. The purpose of clustering the data into four groups is to tease out more subtle effects of the econometric analysis that would otherwise not be captured by clustering all regimes into one group. A total of five regressions will be run, one for each of the four quadrants and one combining all countries into one group. Based on the results, two countries will be selected to test out the statistical relationship using more in-depth qualitative, comparative research. Criteria for the selection of these two case studies include the following characteristics:

1. Consistent levels of autocracy over period surveyed;

2. Recent elections;

3. Recent novel uses of technology;

4. Large Muslim population.

First, selecting countries with consistently repressive regimes that hold the appearance of elections may shed some light on whether the increasing availability of ICTs changes the balance of power around the time of elections as these are potential flashpoints for democratic transition. To be sure, "many ruling elites have managed their country's development for decades. What has radically changed in just the last decade is the information infrastructure of political communication" (Howard 2011). Measuring that radical change against sustained repressive regimes in the context of contentious elections may shed light on the underlying causal chains between ICTs and anti-government protests.

Second, "protests online and offline are most common during elections, which are sensitive times for many regimes" (Howard 2011). Indeed, "elections—even rigged ones—have increasingly become moments of political crisis. […] Protests online and offline are most common during elections, which are sensitive times for many regimes" (Howard 2011). Crises provide opportunities, for both sides. The question is how coercive regimes and civil society groups use ICTs to take advantage of said

opportunities and whether this changes the balance of power. Studying protests is also important because these have played an important role in past transitions to democracy. Furthermore, using protests instead of democracy as the dependent variable follows the advice that "one would be well-advised to start on a somewhat smaller scale at which one could still grasp, if not fully master, the connections between the tool and the environment" (Morozov 2011). As Howard (2011) rightly notes, "protests and activist movements have led to successful democratic insurgencies, insurgencies that depended on ICTs for the timing and logistics of protest. Sometimes democratic transitions are the outcome, and sometimes the outcome is slight improvement in the behavior of authoritarian states."

Third, selecting countries with innovative uses of ICT use will provide focused events to qualitatively assess the impact (or backlash) of ICTs in repressive environments. In addition, if the results of the research show that "new information technologies such as mobile phones and the internet provided the communications infrastructure for mobilization," one can ask whether "the lack of democratic transition was a technological or social failing?" (Howard, 2010). Having specific technologies in mind and examples of these technologies being applied will facilitate the qualitative research.

Fourth, Howard's (2011) research on the impact of ICTs on dictatorship and democracy is the most rigorous and comprehensive to date. Howard focuses his analysis on 75 countries with significant Muslim populations. Because Howard's results are the most robust in the literature, the countries selected for this study will seek to leverage the extensive empirical research already carried out by Howard (2011) in order to provide a more informed analysis and a richer contribution to the debate on liberation technologies. In addition, selecting countries with large Muslim populations has obvious policy relevance given the Obama Administration's Net Freedom and Civil Society 2.0 initiatives. Indeed, the State Department recently ran a $5 million grant competition in the Middle East, soliciting funding requests for digital activism projects.

The purpose of the qualitative analysis is to go beyond the aggregated protest and technology data to test whether any causal chains exist that might suggest that the information revolution empowers repressive regimes at the expense of social resistance

movements, or vice versa. The purpose of the qualitative analysis is also to move beyond the many anecdotes and superficial case studies that plague the qualitative literature. The qualitative research in this dissertation will combine process tracing and semi-structured interviews to test the conceptual framework developed above. More specifically, the qualitative case study research will assess the impact of information and communication technologies on (1) mobilizing structures; (2) opportunity structure and (3) framing processes as defined by the conceptual framework developed in this chapter.